# 61st Annual Conference on Magnetism and Magnetic Materials

## NEW ORLEANS, LOUISIANA
## OCTOBER 31 – NOVEMBER 4, 2016


AIP Publishing

IEEE MAGNETICS

*Jointly sponsored by AIP Publishing, LLC and the IEEE Magnetics Society*

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# GENERAL CONFERENCE INFORMATION

## SCOPE OF THE CONFERENCE

The 61st Annual Conference on Magnetism and Magnetic Materials (2016 MMM) is sponsored jointly by AIP Publishing and the IEEE Magnetics Society, in cooperation with the American Physical Society. Members of the international scientific and engineering communities interested in recent developments in fundamental and applied magnetism are invited to attend and contribute to the technical sessions. The technical program will include invited and contributed papers in oral and poster sessions, invited symposia, and an evening session, with about 1700 presentations overall. This Conference provides an outstanding opportunity for worldwide participants to meet their colleagues and collaborators and discuss developments in all areas of magnetism research.

## NEW ORLEANS, LOUSIANA

New Orleans is one of the world's most fascinating cities. It is home to a unique melting pot of culture, food and music, and is one of America's most culturally and historically rich destinations. To learn more about the city, consider taking a city tour, a plantation tour, or even a swamp tour! Go to www.magnetism.org under "Travel Guide/ City Information" to book a tour and receive a 10% discount.

The Conference will be held at the **New Orleans Marriott Hotel**, located adjacent to the famous French Quarter. This hotel offers easy access to the best restaurants in the city and an array of live music venues and Bourbon Street nightlife. Nearby attractions include the National WWII Museum, the Audubon Aquarium of the Americas and the bustling French Market. Please support our efforts to keep registration fees low by booking your room here. Discounted rates are available until October 7, 2016 at www.magnetism.org under "Travel Guide/ Hotel Information".

## SPECIAL CONFERENCE SESSIONS

### Tutorial: A Primer for Topology in Magnetism (Session YA)

**Monday, October 31** 2:00 - 4:30 pm
*Mardi Gras Ballroom A-E*

**Chair:** Stephane Mangin (Université de Lorraine – CNRS)

**Speakers:** Ashvin Vishvanath (Harvard University)
"Topology in Magnetism: Theory"

André Thiaville (Université Paris-Sud)
"Topology in Magnetism"

Christos Panagopoulos (Nanyang Technological University)
"Interplay of Spin Orbit Coupling with Magnetism in Low-Dimensions for Room Temperature Device Applications"

## Evening Session: Neuromorphic Computing (Session ZA)

**Wednesday, November 2** 6:00 - 7:40 pm
*Mardi Gras Ballroom A-E*

**Chair:** Peter Fischer (Lawrence Berkeley National Laboratory)

**Speakers:** Ivan K. Schuller (University of California, San Diego)
"Neuromorphic Computing"

Tetsuo Endoh (Tohoku University)
"Nonvolatile Brain-Inspired VLSIs Based on CMOS/MTJ Hybrid Technology for Ultralow-Power Performance and Compact Chip"

Julie Grollier (Unité Mixte de Physique CNRS/Thales)
"Spintronic Nanodevices for Bio-Inspired Computing"

*At 6:00 pm, the Best Student Presentation Award winner will be announced.*

## Symposia

Eight symposia are scheduled during the Conference. These sessions consist entirely of invited talks by experts in the field and will take place in the Mardi Gras Ballroom on the 3rd floor.

| | |
|---|---|
| **AA** | Spin Transport in Antiferromagnets |
| **BA** | Topological Insulator/Ferromagnet Heterostructures for Spintronics |
| **CA** | New Developments in Nanoscale Sensing with Nitrogen-Vacancy Center Magnetometry |
| **DA** | Voltage-Controlled Spintronics for Nanoelectronics Beyond Moore's Law |
| **EA** | Terahertz Spintronics |
| **FA** | Spintronics with Superconductivity |
| **GA** | Ultralow Damping |
| **HA** | All Optical Switching |

# SPECIAL CONFERENCE EVENTS

## Welcome Reception

All aboard! Conference attendees are invited to attend a Welcome Reception on Tuesday, November 1, sponsored by the IEEE Magnetics Society, to be held aboard the Natchez and Creole Queen Riverboats. We'll begin at 6:00 pm with a private parade just for MMM attendees, departing from the New Orleans Marriott and proceeding down to the docks (about 0.4 miles). Then we set sail from 6:30 – 8:30 pm. Take in the sites of New Orleans from the Mississippi. This will be a fantastic and memorable networking event where you can connect with colleagues and friends. It is not to be missed!

Conference attendees will receive one ticket to the reception included in their registration. Additional guest tickets may be purchased in advance or onsite ($70 for adults, $35 for children 6-12 years old). All reception attendees must have a ticket to board the boat, including children. More information can be found at www.magnetism.org under "Program/ Reception".

## Meet the Experts

*Supported by:*

evicomagnetics

Students who have registered in advance of the Conference to attend one of these events will have the exclusive opportunity to participate in small, informal discussion groups with their designated Expert. Students are encouraged to bring their own lunch as only beverages will be provided. This event will be held Tuesday through Thursday from 12:00 - 1:00 pm in Studio 6. **You must register in advance.**

*Thank you to the IEEE Magnetics Society for sponsoring the following networking events.*

## Student Networking Reception

The Student Networking Reception will be held on Wednesday, November 2nd from 5:00 - 6:30 pm in the Grand Ballroom Foyer on the 3rd floor. This event is open to all current college and graduate students.

## Young Professionals Networking Event

The Young Professionals Networking Event will be held on Wednesday, November 2nd from 7:45 - 9:15 pm in Balcony I/J on the 4th floor. If you have just recently entered the professional workforce, join us for professional development insights, networking and refreshments.

## Women in Magnetism Networking Event

Expand your professional network! Don't miss the Women in Magnetism Networking Event, sponsored by the IEEE Magnetics Society, on Thursday, November 3rd from 5:00 - 6:30 pm in the beautiful St. Charles Room on the 41st floor. This is an opportunity to become acquainted with women in the profession and to discuss a range of topics including leadership, work-life balance, and professional development. All graduate students, researchers and retirees are encouraged to attend. For more information, contact the event organizer Pallavi Dhagat at: dhagat@eecs.oregonstate.edu.

## Bierstuben

Join us a for a taste of New Orleans! A different Abita Brewing Company beer will be featured each evening at this event on the 3rd floor.

Monday ........................................ 4:30 - 6:00 pm
Wednesday ........................................ 5:00 - 6:30 pm
Thursday ........................................ 5:00 - 6:30 pm

## Coffee

Complimentary coffee service will be available Tuesday through Friday mornings from 8:15 - 9:45 am in the Exhibit/Poster Hall.

# REGISTRATION

The Registration Desk, located in the Grand Ballroom Foyer on the 3rd floor, will be open during the following hours:

Monday ........................................ 12:30 pm - 7:00 pm
Tuesday ........................................ 7:00 am - 6:00 pm
Wednesday ........................................ 8:00 am - 2:00 pm
Thursday ........................................ 8:00 am - 2:00 pm

*For registration assistance on Friday go to the Office in Studio 5.*

***Onsite Registration Rates:***

| | |
|---|---|
| Full | $610 USD |
| Student | $300 USD |
| Unemployed/Retired | $300 USD |

Attendees are required to wear name badges to enter all Conference events. A ticket is also required to attend the Welcome Reception.

## CAMERA, CELL PHONE AND VIDEO RECORDING POLICIES

Attendees are not permitted to take pictures of speaker slides or posters, or to make video recordings of presentations. Furthermore, attendees are asked to be respectful of their colleagues by silencing all cell phones before entering the session rooms.

## #MMM61

Be sociable—share! **#MMM61**

Follow us on Twitter
**@MagnetismOrg**

Like our Facebook page
**www.facebook.com/magnetism.org/**

## WIRELESS INTERNET ACCESS

Wi-Fi for attendees is sponsored by the IEEE Magnetics Society. Select the "Marriott_Conf" network on your mobile device or computer under the available wireless networks. Open an internet browser and Agree to the Terms and Conditions. When prompted, enter the password "MMM2016".

## PUBLICATIONS

Conference papers will be published in a special issue of *AIP Advances* in early 2017 (aipadvances.aip.org) at no additional cost to the author. *AIP Advances* is a peer-reviewed, fully open access, multidisciplinary journal covering all areas of the physical sciences (experimental, theoretical, and applied). *AIP Advances*' inclusive scope and publication standards make it an excellent outlet for scientists across the physical sciences.

To check the status of their papers, authors should refer to the PXP submission site at http://mmm.peerx-press.org. For all other publications questions, visit the Conference Office in Studio 5.

## SESSION CHAIRS

Poster and Oral Session Chairs are expected to attend the Session Chair Breakfast at 7:15 am in Balcony L/M on the 4th floor **on the day of their session**. If you are chairing an oral session, you must bring your laptop computer to your session or arrange to borrow one, as it is the **Session Chair's laptop that will be used for session timing**.

## SPEAKER REHEARSAL ROOM

Speakers may use the Speaker Rehearsal Room in Regent on the 4th floor to practice their presentations with the provided audiovisual equipment (LCD projector and screen). This room will be available from Monday at 1:00 pm until Friday at 1:00 pm.

## ORAL SESSIONS

Oral sessions will be held Tuesday through Friday from 8:30 - 11:30 am and 1:30 - 4:30 pm. **Speakers must bring their presentation on their own laptop computer, have it powered on and ready to connect to the projector.** Only standard PC-style VGA connections to the LCD projector will be supplied, so you must supply any required adaptor for your computer. **Mac OS users must make sure they have the correct adaptor plug and that video mirroring is activated.**

In each session room, there will be a multi-port switchbox so that speakers can connect their laptop during the question period of the previous speaker. **Each speaker will be responsible for promptly connecting to the projector and switching to the correct input port. The presentation timer will begin immediately after the introduction by the Session Chair, and there is no extra time allotted to troubleshoot connections or reboot.** Speakers are strongly encouraged to test their laptop connections and screen resolution settings in the Speaker Rehearsal Room or in the session room prior to the start of the session. There will be no technical support provided for speaker-supplied equipment. It is suggested that speakers bring a backup copy of their presentation on a USB flash drive. Session timing must be maintained and no additional presentation time will be given in the event of technical difficulties.

## BEST STUDENT PRESENTATION AWARD

*Supported by:*

APS physics GMAG

The American Physical Society Topical Group on Magnetism and its Applications (GMAG) is sponsoring the competition for the Best Student Presentations. The competition recognizes and encourages excellence in graduate studies in the field of magnetism. There will be a $1000 USD one-year fellowship for the winner and $250 USD one-year fellowship for the remaining finalists, who will be announced Wednesday evening prior to the start of the Evening Session. Conference attendees are encouraged to attend the finalist's talks and support these young scientists.

## Finalists:

**AB-09** ***Micromagnetic Investigations of Higher Order Anisotropy in Ultra-Thin Films with Fluctuating Perpendicular Anisotropy***
Jamileh Beik Mohammadi (University of Alabama)

**AD-04** ***Unusual Nature of the Martensite and Ferromagnetic Transitions in*** $Ni_2Mn_{0.4-x}Fe_xCr_{0.6}Ga$ ***Heusler Alloys***
Jeffrey Brock (Miami University)

**BH-11** ***Brain-Inspired Computing Using the Transient Dynamics of Spin-Torque Oscillators***
Matthew Riou (CNRS/Thales)

**CF-06** ***Coupling Electrodynamics and Micromagnetics: Modeling of Eddy Currents***
Simon Couture (University of California, San Diego)

**CH-01** ***The Experimental and Theoretical Study of Mn Doped*** $Bi_2Te_3$
Arsham Ghasemi (University of York)

**Congratulations to the winners at the 2016 Joint MMM – Intermag Conference:**

**IEEE Magnetics Society Best Student Presentation Award:**
**Winner: Afshin Houshang, University of Gothenburg (BC-15)**
Finalists: David Ellsworth, Yan Ni, Sergiu Ruta, Noriyuki Sato

**APS-GMAG Best Student Presentation Award:**
**Winner: Natalia Rinaldi-Montes, University of Oviedo (AE-11)**
Finalists: Jizhai Cui, Ye Du, Anil Rajapitamahuni, Chenattukuzhiyil Safeer, Xufeng Zhang

## POSTER SESSIONS

Poster Sessions will be held Tuesday through Thursday from 9:30 am - 12:30 pm and 2:30 - 5:30 pm. On Friday there will be a Poster Session from 9:30 am - 12:30 pm.

Poster presenters should set up their materials at least 30 minutes before their session starts, and must be present at their poster, at a minimum, for the first *and* last hour of each Poster Session. **Presenters must remove all of their materials promptly at the end of their session** (except the push-pins provided by the Conference). Any poster materials not removed will be discarded in order to prepare for the next session.

## BEST POSTER PRESENTATION AWARD

*Supported by:*

GMW

All posters will be eligible for nomination for this award provided that they meet the requirements and guidelines described on the Conference website. It is required that an author be registered for the Conference and be present at the first and last hour of the poster session to present details and answer questions. Nominations will be made by the Poster Session Chairs, and the Poster Award Committee will review the nominated posters. Selections will be based on the level of the research, quality of the poster, and clarity of the presentation. The award will be given during the last hour of each poster session, and winners will receive a $50 USD cash award, thanks to the generous support of GMW. A ribbon will also be attached to the winning posters, and they will be prominently displayed for the remainder of the Conference.

A complete list of the Best Poster Award Winners from the 2016 Joint MMM-Intermag Conference is available on the Conference website.

## STUDENT TRAVEL SUPPORT

Travel grants are offered to a limited number of students who are presenting at the Conference. Students must apply online (with advisor's endorsement), and the grants are used to reimburse partial travel expenses (receipts required). The program is for students who have not previously received a Conference or IEEE Magnetics Society travel grant. Only one application per research group is accepted. Postdoctoral fellows and non-students are not eligible. The recipients for this Conference will be informed about their selection in late September. If you are interested in applying for a travel grant to attend future MMM conferences, go to www.magnetism.org.

## CHILD CARE SUPPORT

Child care grants are offered to a limited number of attendees who are bringing young children to the Conference or who incur extra expenses in leaving their children at home. The recipients for this Conference have already been informed about their selection and are required to submit receipts for their reimbursable expenses. If you are interested in applying for child care support at future MMM conferences, go to www.magnetism.org.

## CONFERENCE ORGANIZATION

### STEERING COMMITTEE

General Chair .................................... Kai Liu
Chair Elect ....................................... Pallavi Dhagat
Past Chair ........................................ Bruce Gurney
Co-Treasurers .................................... June W. Lau and Maria Varela
Program Co-Chairs ............................ Peter Fischer, Chih-Huang Lai, and Stephane Mangin

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Publications Chair ............................. Minn-Tsong Lin
Publications Editors: ......................... Farkhad Aliev, Victorino Franco, Olle Heinonen, Ron Jansen, Shang-Fan Lee, Connie Li, Seiji Mitani, Marek Przybylski, Di Wu
Exhibits Chair .................................. Mingzhong Wu
Publicity Chair ................................. Brian Maranville
Social Media Chair ........................... Daniel Lottis
Student Awards/Travel Chair ............ Barry Zink
Editor, *AIP Advances* ........................ Vincent Crespi
Conference Managers ....................... Molly Bartkowski and Diane Melton
Abstracts/Publications Manager ....... Regina Mohr
Exhibits Manager .............................. Jennifer Fiske
Registration Manager ........................ Ashley Cesare

## ADVISORY COMMITTEE

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|---|---|
| Chair | Bruce Gurney |
| Chair-Elect | Kai Liu |
| Executive Treasurer | June W. Lau |
| Recording Secretaries | Diane Melton and Regina Mohr |
| Term expiring **December 1, 2016**: | Paul Crowell, Pallavi Dhagat, Kai Liu, Hariharan Shrikanth, Mark Stiles, Koki Takanashi, Bruce Terris, Suzanne te Velthuis, Shinji Yuasa |
| Term expiring **December 1, 2017**: | Petru Andrei, Katayun Barmak, Jeff Childress, Alina Maria Deac, Atsufumi Hirohata, Xiaofeng Jin, Mark Kief, Vivian Ng, Tiffany Santos, Matt Willard |
| Term expiring **February 1, 2019**: | Cindi Dennis, Peter Fischer, Chih-Huang Lai, June W. Lau, Kyung-Jin Lee, Laura Lewis, Alan MacDonald, Stephane Mangin, Christopher Marrows |

## SPONSORING SOCIETY REPRESENTATIVES

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|---|---|
| AIP Publishing | Bill Burke |
| IEEE Magnetics Society | Randall Victora |

## ADDITIONAL INFORMATION

To join our mailing list, please visit www.magnetism.org or contact info@mmmconference.com.

## FUTURE CONFERENCES

**2017 Intermag Conference**
April 24-28, 2017, Dublin, Ireland

**2017 Magnetism and Magnetic Materials Conference**
November 6-10, 2017, Pittsburgh, PA

**2018 Intermag Conference**
April 23-27, 2018, Singapore

**2018 International Conference on Magnetism**
July 16-20, 2018, San Francisco, CA

**2019 Joint MMM-Intermag Conference**
January 14-18, 2019, Washington, DC

**2019 Magnetism and Magnetic Materials Conference**
November 4-8, 2019, Las Vegas, NV

**2020 Magnetism and Magnetic Materials Conference**
November 16-20, 2020, Fort Lauderdale, FL

**2022 Joint MMM- Intermag Conference**
January 10-14, 2022, New Orleans, LA

# EXHIBITORS *(AS OF MONTH DAY, 2016)*

An exhibition of magnetism-related services, equipment, materials, and software will be held in the Grand Ballroom on the 3rd floor.

Exhibit hours:

Tuesday ........................................ 9:00 am – 5:30 pm
Wednesday .................................... 9:00 am – 7:00 pm
Thursday ...................................... 9:00 am – 7:00 pm

AJA INTERNATIONAL, Inc.

**Booth 21**

Thin Film Deposition Systems (Sputtering, E-beam, Thermal, Ion Beam, PLD and Multi-Technique). Ion Beam Etch Systems with SIMS (Ion Milling, RIBE). R&D and Pilot Scale Equipment. UHV and HV Magnetron Sputter Sources and Thermal Evaporation Sources. Wide range of Substrate Holders featuring Azimuthal Rotation, RF/DC Biasing, Heating, Water Cooling, $LN_2$ Cooling and Tilting. Sputter Targets and Evaporation Materials. RF/DC Power Supplies.

Contact: Michael Hale
Email: topgun@ajaint.com
Website: www.ajaint.com

American Magnetics

**Booth 24**

American Magnetics, Inc. (AMI) has been a manufacturer of superconducting magnet systems and cryogenic equipment for more than 45 years. Founded in 1968, AMI supplies turn-key cryogen-free and liquid helium based superconducting magnet systems, with custom solutions ranging from completely conduction cooled multi-axis systems combined with an integrated variable temperature insert to large room temperature bore zero boiloff helium recondensing systems (Recon™). When AMI's innovative superconducting magnets, such as the multi-axis (Maxes™) series, are coupled with cutting-edge cryostats, the customer is buying a winning combination. Topping off AMI's premier superconducting magnet systems is the Model 430 power supply programmer, which yields extreme accuracy, high automation and easy control for customers, all via Ethernet. AMI offers a complete line of capacitance and resistance based instrumentation that can be utilized to measure any cryogenic fluid with unparalleled accuracy and reliability. AMI stands behind its products with a warranty offering full system protection for 15 months.

Contact: Seth Rector
Email: sales@americanmagnetics.com
Website: americanmagnetics.com

Booth 25

Attocube offers an extensive portfolio of cutting-edge scanning probe microscopes for operation in high magnetic fields and cryogenic temperatures. Our one-inch microscope inserts, specifically designed for the PPMS from Quantum Design, allow for highly sensitive SPM measurements such as AFM, MFM, SHPM, as well as optical experiments such as confocal & RAMAN microscopy. The attoDRY800, the world's first cryo-optical table with integrated cold breadboard, is the perfect platform for challenging quantum and nano-optics experiments. Nano-precise piezo positioning systems for extreme environments and interferometric sensor solutions complete Attocube's ample product portfolio.

Contact: Anja Schmalz
Email: info@attocube.com
Website: www.attocube.com

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Booth 10

CAPRES A/S is a nano-technology based company. Our unique probe technology is designed for in-line production monitoring in the semiconductor industry where our fully automated tools for mass production are used at four of the leading computer chip companies. Our unique probe and tool technology is ideal for R&D as well as production monitoring because it allows direct measurements of Sheet Resistance, Hall Mobility, and Active Carrier Density on very thin conducting films down to a few nm directly on 300 mm product wafers or smaller samples without sample preparation. Our unique CIPTech® tool is the preferred method for characterizing magnetic films in the MRAM and Read Head industry.

Contact: Tom Karpowicz
Email: tjk@capres.com
Website: www.capres.com

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GMW Associates

Booths 2 & 3

GMW will show: Metrolab Three-Component Magnetic Field Probes with USB Interface and LabView software. Full-scale ranges of ± 100 μT (1 G), ± 8 mT (80 G), ± 3T and ± 20T. Senis One-, Two- and Three-Component Hall Transducers with analog output, full scale field ranges to ± 20 T and frequency response from dc to 75 kHz. The Senis Probes can be used stand-alone or in Senis Magnetic Field Mapping Systems. GMW Electromagnets for magnetic material and thin film studies including the Miniature Projected Field Electromagnet family: model 5201 for in-plane fields, 5203 for vertical fields, 5205 series for larger volume, modest vertical fields, and the new 5204 for generating any field direction and amplitude from three components. HTS-110 compact Electromagnets including Short Solenoids to ± 3 T, Shielded Solenoids to ± 16 T and Shielded Dipoles to ± 8 T. Matesy Magneto-Optic Sensor systems for visualization of vertical dc and ac magnetic fields at the surface of a planar sample.

Contact: Ben Hartzell
Email: ben@gmw.com
Website: www.gmw.com

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HINDS™ INSTRUMENTS

Booth 14

Hinds Instruments' products for Magneto Optic Kerr Effect (MOKE) experiments are the Exicor® Domain™ Hysteresis Looper and MOKE kits. The Hystersis Looper is a turn-key system that allows the user to plot hysteresis loops and determine coercivity values within the magnetic field range of 0 to 2400 Gauss. The MOKE kit options include photo detectors, lock-in amplifiers, and photoelastic modulators (PEMS) that allow experimenters to build their own MOKE system. In both the Looper system and the MOKE kits the robustness and convenience of Hinds photoelastic modulator (PEM) technology allows sensitive detection of magneto-optic signals produced by thin magnetic films.

Contact: Connie Wimmer
Email: cwimmer@hindsinstruments.com
Website: www.hindsinstruments.com

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Intlvac THIN FILM

Booth 11

Intlvac Thin Films provides PVD (Physical Vapor Deposition) and IBE (Ion Beam Etch) systems for magnetic materials, metals and oxides. You can create and etch compounds that have never existed in nature with our Nanoquest Ion Beam Etch systems, and Nanochrome magnetron sputtering systems. Research and development plays a major role in our technology's superiority. Our in-house development lab designs, engineers and manufacturers machinery and processes used for PVD and IBE. We specialize in engineering solutions for a variety of specific results and outcomes using our process lab. We provide our customers with machinery needed for creating ultra-thin coatings and etching solutions.

Contact: Dino Deligiannis
Email: dino@intlvac.com
Website: www.intlvac.com

**Booth 15**

Kaufman & Robinson is an established 40-year-old company focused on providing world class ion source products for the vacuum process community. Focused on ion/plasma sources, electron neutralizers, and power supply controllers needed in crucial deposition and etching processes such as ion assisted deposition, in-situ preclean and ion beam sputtering. Our product technology includes high current gridless plasma sources, filamentless RFICP gridded sources, and low energy electron sources.

Contact: Derek Kauffman
Email: dkaufman@ionsources.com
Website: www.ionsources.com

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**Booth 4**

A leading innovator in solutions for measuring materials under controlled magnetic field and temperature conditions, Lake Shore offers vibrating sample magnetometers (VSMs) for characterizing magnetic properties over a range of temperatures (4.2 K to 1273 K) and fields to 3.42 T; magnetic test and measurement instruments; cryogenic probe stations with integrated vertical and horizontal field magnets (to 2.5 T) for on-wafer magneto-transport, DC, RF, or microwave measurements; and an integrated system for exploring the electronic and magnetic properties of materials at THz frequencies as a function of variable temperature (5 K to 300 K) and field (to 9 T).

Contact: Sarah Kinkead
Email: general@lakeshore.com
Website: www.lakeshore.com

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**Booth 8**

Mantis Deposition is dedicated to the design and manufacture of high-quality deposition systems and components that offer exquisite control of film composition, thickness, and structure for magnetic thin films, multilayers, and nanoparticles. Our product offerings include PVD, MBE, and Nanoparticle deposition systems as well as modular R&D deposition systems that can be customized for your application. We offer a range of sputter magnetron sources, RF atom and ion sources, e-beam evaporators, thermal gas crackers, and unique nanoparticle technology. Our highly skilled team of engineers, physicists, and designers will be happy to work with you on your next deposition challenge. Our partner company, Sigma Surface Science, specializes in state-of-the-art UHV SPM and ESCA technology for cutting-edge surface science.

Contact: Jessica Hilton
Email: jessica.hilton@mantis-sigma.com
Website: www.mantisdeposition.com

MicroSense

**Booth 9**

MicroSense is a leading manufacturer of magnetic measurement systems for research and production quality control. Our Vibrating Sample Magnetometer (VSM) systems are used at many academic and commercial magnetics laboratories worldwide. MicroSense VSMs have the lowest noise, highest signal-to-noise ratio and highest magnetic field in the smallest footprint of any horizontal field VSM. MicroSense also offers a range of non-contact, in-line (full wafer or disk) research and production magnetic metrology systems for in-plane and perpendicular MRAM, hard disk and recording head process control. MicroSense was the first to introduce a 300 mm ready non-contact magnetic property measurement tool for MRAM.

Contact: Erik Samwel
Email: esamwel@microsense.net
Website: www.microsense.net

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MTI
KJ GROUP

**Booth 5**

MTI Corporation has been providing a total solution for materials research labs since 1995. MTI supplies ceramic, crystal, metallic substrates from A-Z and nano-powder. We also provide laboratory R&D equipment including mixing, cutting, polishing machines, high temperature muffle and tube furnaces, pressing machines, film coaters, glove boxes, high vacuum systems, high pressure furnaces, RTP furnaces, CSS and PECVD furnace systems, high pressure and hydrogen furnaces, melting and casting systems, crystal growth systems as well as compact XRD/X-Ray orientation unit and equipment for battery and energy materials research.

Contact: Andy Huang
Email: andy@mtixtl.com
Website: www.mtixtl.com

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NanoMagnetics Instruments

**Booths 22 & 23**

NanoMagnetics Instruments Ltd. (NMI) is one of the world leading companies in the field of Scanning Probe Microscopes (SPMs) and measurement systems for various field of science and technology. Founded in 1999 as the first nanotechnology spin off in Turkey, markets its products in the world under NanoMagnetics Instruments Ltd. brand, which is a fully owned subsidiary. Prestigious universities like Oxford, MIT, Kyoto, and Harvard, research labs like Los Alamos National Lab., Argonne National Lab., TATA-Institutes, government institutes like NASA and companies like Seagate, Microsoft, and Samsung are among our customers. Four universities in the top 10 list and 20 universities in the top 100 list are our customers.

Contact: Seda Bayrakci
Email: sales@nanomagnetics-inst.com
Website: www.nanomagnetics-inst.com

**Booth 1**

NanoScan is a member of the IonTof group of companies specializing in high-vacuum Scanning Probe Microscopes. Our flagship microscope, the VLS-80, offers a standalone solution for high-vacuum SPM. It runs all dynamic modes of imaging and has two phase-locked loops to enable dual modes. Magnetic imaging is a key strength of the VLS-80, with 10-nm lateral resolution guaranteed; an industry best. The large stage offers excellent positioning repeatability over the complete range of 100mm x 100mm.

Contact: Tim Ashworth
Email: tvashworth@nanoscan.ch
Website: www.nanoscan.ch

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**Booths 6 & 7**

Quantum Design manufactures automated material characterization systems providing temperatures from 0.05 to 1000 K, magnetic fields up to 16 tesla, and a wide range of measurements, including: VSM magnetometry, magneto resistance, and sample rotator. Instruments include the Physical Property Measurement System (PPMS®), SQUID-based Magnetic Property Measurement System (MPMS®3), VersaLab, and PPMS® DynaCool. All systems have cryogen-free options. Quantum Design also manufactures advanced helium liquefiers (ATL80, ATL160) and helium recovery systems, and a magneto-optic probe for THz-Raman measurement in a cryomagnetic platform. Quantum Design International distributes direct write and 3D thermal scanning probe lithography systems, NanoMOKE, FMR spectrometers, single crystal furnaces, and scanning probe cryomagnetic systems.

Contact: Melissa Figueroa
Email: info@qdusa.com
Website: www.qdusa.com

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**Booth 17**

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Contact: Craig Wall
Email: wall@RHK-tech.com
Website: www.rhk-tech.com

**Booth 20**

SINGULUS TECHNOLOGIES develops and builds machines for economical and resource-efficient production processes. The application areas include vacuum thin-film and plasma coating for wet-chemical processes as well as thermal process technologies. For all machines, processes and applications SINGULUS TECHNOLOGIES utilizes its know-how in the areas of automation and process technology in order to develop additional, attractive work areas with innovative products next to the existing application areas of Solar, Semiconductors and Optical Disc.

Contact: Bernhard Krause
Email: sales@singulus.de
Website: www.singulus.de

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**Booth 16**

SmartTip has extended its range of magnetic analysis tools with the SmartProber P1, a 300 mm capable 6 kOe perpendicular field CIPT tool. Find out more about this and our other affordable CIPT analysis tools at our booth. As the world's only AFM probe provider specializing in MFM probes, we also continue to offer a range of MFM probe solutions fit to your specific application: hard magnetic media, soft magnetic structures, applied field measurements, etc. Our Smart Coating technology guarantees very high resolution and reproducible results.

Contact: Daniel Bijl
Email: d.bijl@smarttip.nl
Website: www.smarttip.nl

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**Booth 13**

SuessCo Simulations, is world leading provider of micromagnetic and spin transport software. The software FEMME allows for the simulation of magnetization processes of moving arbitrary shaped magnetic structures. This makes FEMME a perfect software package for the simulation of the magnetization dynamics of the entire magnetic recording process including a moving recording head above advanced multilayer media. The software MAGNUM.FE allows the fully self-consistent solution of the spin current and spin accumulation with the LLG equation. This allows for taking into account for spin torque effect in a fully 3-D manner, such as in spin torque oscillator (STO), noise in GMR/TMR readers, and microwave assisted write heads (STO). In addition, the voltage drop at defined contact points in the magnetic/conducting multilayer structure can be directly calculated.

Contact: Dieter Suess
Email: office@suessco.com
Website: www.suessco.com/simulations

Tohoku Steel Co., Ltd.
Sendai, Japan
*Tohoku Instrumentation Technologies*

**Booth 18**

Tohoku Steel has developed and commercialized numerous electromagnetic materials and technologies for over 70 years through close academic and cooperative partnership with Tohoku University. In this exhibit, you can obtain detailed information on Tohoku's unique line of magnetic measurement systems, which includes $H_c$ meter and MR head / MRAM wafer probing systems. Tohoku's high-field MR-Probers, capable of applying over 15 kOe, will be a cutting edge tool for your most advanced research and production line inspection needs.

Contact: Kazuhiko Okita
Email: soushi@sm.rim.or.jp
Website: www.tohokusteel.com/en

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Ube Material Industries,Ltd.

**Booth 12**

Ube Material Industries will exhibit our MgO sputtering target which is indispensable for spintronics applications. We can provide the world's largest class MgO sputtering target (18 inch/460 mm), which is high purity (the actual measurement value is 99.999%) and high density (the actual measurement value is 99.7%). Additionally, our MgO sputtering target has high mechanical strength, and will reduce the risk of target cracking. Furthermore, we are manufacturing the raw material "high purity MgO powder" by ourselves and thus we will be able to provide you with a sufficient quantity of high quality MgO sputtering target.

Contact: Yoshihiro Nishimura
Email: takuya.mishima@ubematerials.co.jp
Website: www.ubematerial.com

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***MMM publications will now be published in AIP Advances!***

This year, the invited and contributed papers presented at the MMM Conference will be published in the fully open access journal *AIP Advances*. *AIP Advances* is a peer reviewed journal covering all the areas of the physical sciences (experimental, theoretical, and applied), making it a good fit for the range of research on magnetism and magnetic materials now being presented at the MMM Conference.

The IEEE Magnetics Society is the leading international professional organization for magnetism and related professionals throughout the world. The IEEE Magnetics Society promotes the advancement of science, technology, applications and training in magnetism. It fosters presentation and exchange of information among its members and within the global technical community, including education and training of young engineers and scientists. It seeks to nurture positive interactions between all national and regional societies acting in the field of magnetism.

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The American Physical Society's Topical Group on Magnetism and its Applications (GMAG) provides for its members a convenient way to keep up with the fast-paced field of magnetism and to connect with other members of the magnetism community. GMAG is proud to support the Best Student Presentation Awards, as a way to reach the magnetism community at the MMM Conference and to benefit the students. Membership in GMAG also gives access to GMAG-sponsored student awards, outreach grants and the GMAG Newsletter. GMAG has 900+ members. Consider joining GMAG today!

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Email: tiffany.santos@mailaps.org
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Contact: Alex Menendez
Email: menendez@aps.org
Website: www.journals.aps.org

evicomagnetics

Evico magnetics GmbH was founded in 2006 as spin-off of the Leibniz Institut for Solid State and Materials Research (IFW) Dresden. The main products are: (i) Magneto-optical Kerr microscope systems. By making use of the Kerr effect in optical wide-field polarization microscopes, the magnetic domains and magnetization processes of magnetic materials are visualized with digital contrast enhancement. At the same time the Kerr microscope serves as magneto-optical magnetometer for the sensitive measurement of hysteresis loops (MOKE magnetometry). (ii) High Pressure Milling Vials with a gas temperature monitoring system for the synthesis of magnetic powders and hydrogen storage materials.

Contact: Rudolf Schaefer
Email: r.schaefer@evico-magnetics.de
Website: www.evico-magnetics.de

# CONFERENCE PROGRAM-AT-A-GLANCE

| | | |
|---|---|---|
| **MONDAY, OCTOBER 31, 2016** | | |
| **2:00 pm - 4:30 pm** | | |
| **YA** | Tutorial: A Primer for Topology in Magnetism | *Mardi Gras A-E (L3)* |
| **TUESDAY, NOVEMBER 1, 2016** | | |
| **8:30 am - 11:30 am • Oral Sessions** | | |
| **AA** | Symposium: Spin Transport in Antiferromagnets | *Mardi Gras A-E (L3)* |
| **AB** | Ferromagnetic Resonance | *Mardi Gras F-H (L3)* |
| **AC** | Magnetic Skyrmions I | *La Galeries 1-2 (L2)* |
| **AD** | New Magnetic Materials | *La Galeries 3 (L2)* |
| **AE** | Ultrafast Switching | *La Galeries 4-5 (L2)* |
| **AF** | MRAM and Magnetic Logic Devices I | *Studio 1-2 (L2)* |
| **AG** | Biochemical and Biomedical Applications I | *Studio 9-10 (L2)* |
| **AH** | Nanowires and Nanoparticles I | *Studio 7-8 (L2)* |
| **AI** | Anisotropy Effects in Thin Films I | *Studio 3-4 (L2)* |
| **9:30 am - 12:30 pm • Poster Sessions** | | *Grand Ballroom (L3)* |
| **AP** | Magnetic Recording I | |
| **AQ** | Energy Assisted Recording I | |
| **AR** | High Frequency and Microwave Devices I | |
| **AS** | Magnetic Sensors I | |
| **AT** | Magneto-Elastic and Magneto-Optic Materials | |
| **AU** | Electronic Structure | |
| **AV** | Voltage Controlled Magnetism I | |
| **AW** | Fundamental Properties: Spin Glasses and Frustration I | |
| **1:30 pm - 4:30 pm • Oral Sessions** | | |
| **BA** | Symposium: Topological Insulator/Ferromagnet Heterostructures for Spintronics | *Mardi Gras A-E (L3)* |
| **BB** | Spin Hall Effect I | *Mardi Gras F-H (L3)* |
| **BC** | Magnetic Skyrmions II | *La Galeries 1-2 (L2)* |
| **BD** | Domain Wall and Domain Wall Devices I | *La Galeries 3 (L2)* |
| **BE** | Multi-Layer Films and Superlattices I | *La Galeries 4-5 (L2)* |
| **BF** | MRAM and Magnetic Logic Devices II | *Studio 1-2 (L2)* |
| **BG** | Hyperthermia, MRI, and Other Bio-Assays I | *Studio 9-10 (L2)* |
| **BH** | Magnetic Instrumentation and Characterization I | *Studio 7-8 (L2)* |
| **BI** | Superconductivity and Critical Phenomena | *Studio 3-4 (L2)* |
| **2:30 pm - 5:30 pm • Poster Sessions** | | *Grand Ballroom (L3)* |
| **BP** | Micromagnetic and Hysteresis Modeling | |
| **BQ** | Magnetoelectronic Materials and Transport I | |
| **BR** | Magnetoelectronic Materials and Transport II | |
| **BS** | Magnetoresistance and Critical Phenomena | |
| **BT** | Non-Rare-Earth Magnets | |
| **BU** | Permanent Magnet Synthesis and Processing I | |
| **BV** | Permanent Magnet Synthesis and Processing II | |
| **BW** | Complex Oxides I: Films and New Magnetic Materials | |

## WEDNESDAY, NOVEMBER 2, 2016

### 8:30 am - 11:30 am • Oral Sessions

| | | |
|---|---|---|
| **CA** | Symposium: New Developments in Nanoscale Sensing with Nitrogen-Vacancy Center Magnetometry | *Mardi Gras A-E (L3)* |
| **CB** | Magnonics I | *Mardi Gras F-H (L3)* |
| **CC** | Spin-Orbit Torque and Spin-Transfer Torque | *La Galeries 1-2 (L2)* |
| **CD** | Domain Wall, Vortex and Skyrmion Dynamics I | *La Galeries 3 (L2)* |
| **CE** | Patterned Films I | *La Galeries 4-5 (L2)* |
| **CF** | Micromagnetics and MRAM | *Studio 1-2 (L2)* |
| **CG** | Non-Rare-Earth Fe Alloys and Compounds | *Studio 9-10 (L2)* |
| **CH** | Novel Magnetic Order in Thin Films I | *Studio 7-8 (L2)* |
| **CI** | Coupling Effects in Magnetoelectrics and Complex Oxides | *Studio 3-4 (L2)* |

### 9:30 am - 12:30 pm • Poster Sessions *Grand Ballroom (L3)*

| | |
|---|---|
| **CP** | Spin Current and Related Effects I |
| **CQ** | Magnetization Dynamics I: Damping and Simulations |
| **CR** | Spin Hall Effect II |
| **CS** | Nanowires and Nanoparticles II |
| **CT** | Biochemical and Biomedical Applications II |
| **CU** | Complex Oxides II: Bulk and New Magnetic Materials |
| **CV** | Magneto-Caloric Materials I |
| **CW** | Inductors and Transformers I |

### 1:30 pm - 4:30 pm • Oral Sessions

| | | |
|---|---|---|
| **DA** | Symposium: Voltage-Controlled Spintronics for Nanoelectronics Beyond Moore's Law | *Mardi Gras A-E (L3)* |
| **DB** | Magnonics II | *Mardi Gras F-H (L3)* |
| **DC** | Spin Pumping and Related Effects | *La Galeries 1-2 (L2)* |
| **DD** | Domain Wall, Vortex and Skyrmion Dynamics II | *La Galeries 3 (L2)* |
| **DE** | Interfacial DMI and Spin-Orbit Torques | *La Galeries 4-5 (L2)* |
| **DF** | 2D and 3D Nanostructured Arrays I | *Studio 1-2 (L2)* |
| **DG** | Mn- and Co-Based High Anisotropy Systems | *Studio 9-10 (L2)* |
| **DH** | Complex Oxides III: Films and Heterostructures | *Studio 7-8 (L2)* |
| **DI** | Magnetic Microscopy and Imaging | *Studio 3-4 (L2)* |

### 2:30 pm - 5:30 pm • Poster Sessions *Grand Ballroom (L3)*

| | |
|---|---|
| **DP** | Power and Control Magnetics I |
| **DQ** | Power and Control Magnetics II |
| **DR** | Soft Magnetic Materials I |
| **DS** | Soft Magnetic Materials II |
| **DT** | Soft Magnetic Materials III |
| **DU** | Magnetic Sensors II |
| **DV** | Magnetic Instrumentation and Characterization II |
| **DW** | Hyperthermia, MRI, and Other Bio-Assays II |

### 6:00 pm - 7:40 pm

| | | |
|---|---|---|
| **ZA** | Evening Session: Neuromorphic Computing | *Mardi Gras A-E (L3)* |

## THURSDAY, NOVEMBER 3, 2016

### 8:30 am - 11:30 am • Oral Sessions

| | | |
|---|---|---|
| **EA** | Symposium: Terahertz Spintronics | *Mardi Gras A-E (L3)* |
| **EB** | Magnonics III | *Mardi Gras F-H (L3)* |
| **EC** | Magnetization Dynamics II: Domains and Ultrafast Effects | *La Galeries 1-2 (L2)* |
| **ED** | Multiferroic Thin Films, Transport and Magnetoelectric Composites | *La Galeries 3 (L2)* |
| **EE** | Voltage Controlled Magnetism II | *La Galeries 4-5 (L2)* |
| **EF** | Magnetoresistance I: GMR and TMR | *Studio 1-2 (L2)* |
| **EG** | Elementally Modified Intermetallics | *Studio 9-10 (L2)* |
| **EH** | Magneto-Caloric Materials II | *Studio 7-8 (L2)* |
| **EI** | Electronic Structure and Magnetic Semiconductors | *Studio 3-4 (L2)* |

### 9:30 am - 12:30 pm • Poster Sessions — *Grand Ballroom (L3)*

| | |
|---|---|
| **EP** | Magnetic Fluids and Nanoparticles Applications |
| **EQ** | 2D and 3D Nanostructured Arrays II |
| **ER** | Patterned Films II |
| **ES** | Superconductivity and Magnetic Semiconductors |
| **ET** | Domain Wall, Vortex and Skyrmion Dynamics III |
| **EU** | MRAM and Magnetic Logic Devices III |
| **EV** | Power Machines I |
| **EW** | Power and Control Magnetics III |

### 1:30 pm - 4:30 pm • Oral Sessions

| | | |
|---|---|---|
| **FA** | Symposium: Spintronics with Superconductivity | *Mardi Gras A-E (L3)* |
| **FB** | Spin Current and Related Effects II | *Mardi Gras F-H (L3)* |
| **FC** | Antiferromagnetic Spintronics | *La Galeries 1-2 (L2)* |
| **FD** | Single-Phase Multiferroic and Magnetoelectric Materials | *La Galeries 3 (L2)* |
| **FE** | Spin-Orbit and Voltage Controlled Effects | *La Galeries 4-5 (L2)* |
| **FF** | Magnetoresistance II: GMR and TMR | *Studio 1-2 (L2)* |
| **FG** | Rare-Earth-Lean and Ce-Substituted Compounds | *Studio 9-10 (L2)* |
| **FH** | Magnetic Sensors III | *Studio 7-8 (L2)* |
| **FI** | Fundamental Properties: Spin Glasses and Frustration II | *Studio 3-4 (L2)* |

### 2:30 pm - 5:30 pm • Poster Sessions — *Grand Ballroom (L3)*

| | |
|---|---|
| **FP** | Ultrafast Switching and Domain Wall Motion |
| **FQ** | Magnetization Dynamics III: Spin Pumping and Other Effects |
| **FR** | Emergent and Novel Magnetic Order in Thin Films II |
| **FS** | Spin Injection, Spin Transfer Torque and Spin-Orbit Interaction |
| **FT** | Multi-Layer Films and Superlattices II |
| **FU** | Domain Wall and Domain Wall Devices II |
| **FV** | Microwave and Magnetocaloric Materials |
| **FW** | Power Machines II |

| FRIDAY, NOVEMBER 4, 2016 | | |
|---|---|---|
| **8:30 am - 11:30 am • Oral Sessions** | | |
| **GA** | Symposium: Ultralow Damping | *Mardi Gras A-E (L3)* |
| **GB** | Spin Seebeck and Related Effects | *Mardi Gras F-H (L3)* |
| **GC** | Magnetization Dynamics IV: Spin Torque and Interfacial Effects | *La Galeries 1-2 (L2)* |
| **GD** | Low-Dimensional Systems, Ferrites and Garnets | *La Galeries 3 (L2)* |
| **GE** | Spin Transport in Semiconductors and Artificial Structures | *La Galeries 4-5 (L2)* |
| **GF** | High Frequency and Microwave Devices II | *Studio 1-2 (L2)* |
| **GG** | Processing and Magnetic Hardening of Rare-Earth-Transition Metal Compounds | *Studio 9-10 (L2)* |
| **GH** | Magnetic Recording II | *Studio 7-8 (L2)* |
| **GI** | Inductors and Transformers II | *Studio 3-4 (L2)* |
| **9:30 am - 12:30 pm • Poster Sessions** | | *Grand Ballroom (L3)* |
| **GP** | Single-Phase Multiferroics and Magnetoelectrics | |
| **GQ** | Anisotropy Effects in Thin Films II | |
| **GR** | Exchange Bias I | |
| **GS** | Exchange Bias II | |
| **GT** | Magnonics IV | |
| **GU** | DMI and Spin-Orbit Torques | |
| **GV** | Voltage Controled Magnetism III | |
| **GW** | Power and Control Magnetics IV | |
| **1:30 pm - 4:30 pm • Oral Sessions** | | |
| **HA** | Symposium: All Optical Switching | *Mardi Gras A-E (L3)* |
| **HB** | Spin Current and Related Effects III | *Mardi Gras F-H (L3)* |
| **HC** | Spin Torque Oscillators | *La Galeries 1-2 (L2)* |
| **HD** | Magnetoelectronic Materials and Transport III | *La Galeries 3 (L2)* |
| **HE** | Spin Transport in Two-Dimensional Materials | *La Galeries 4-5 (L2)* |
| **HF** | Soft Magnetic Materials IV | *Studio 1-2 (L2)* |
| **HG** | Magneto-Elastic, Magneto-Optic and Microwave Materials | *Studio 9-10 (L2)* |
| **HH** | Energy Assisted Recording II | *Studio 7-8 (L2)* |
| **HI** | Power and Control Magnetics V | *Studio 3-4 (L2)* |

# NEW ORLEANS MARRIOTT HOTEL

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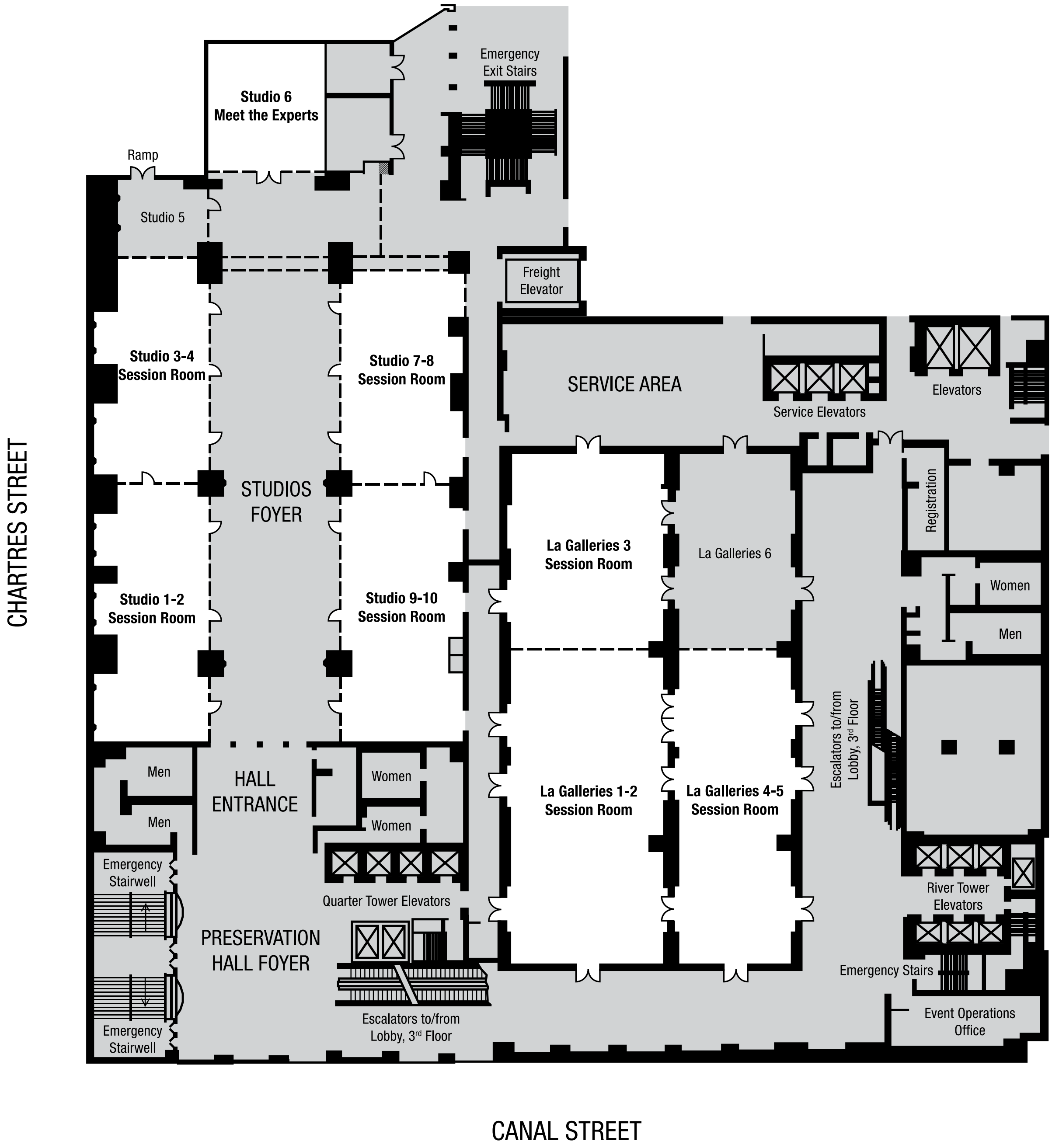

# NEW ORLEANS MARRIOTT HOTEL

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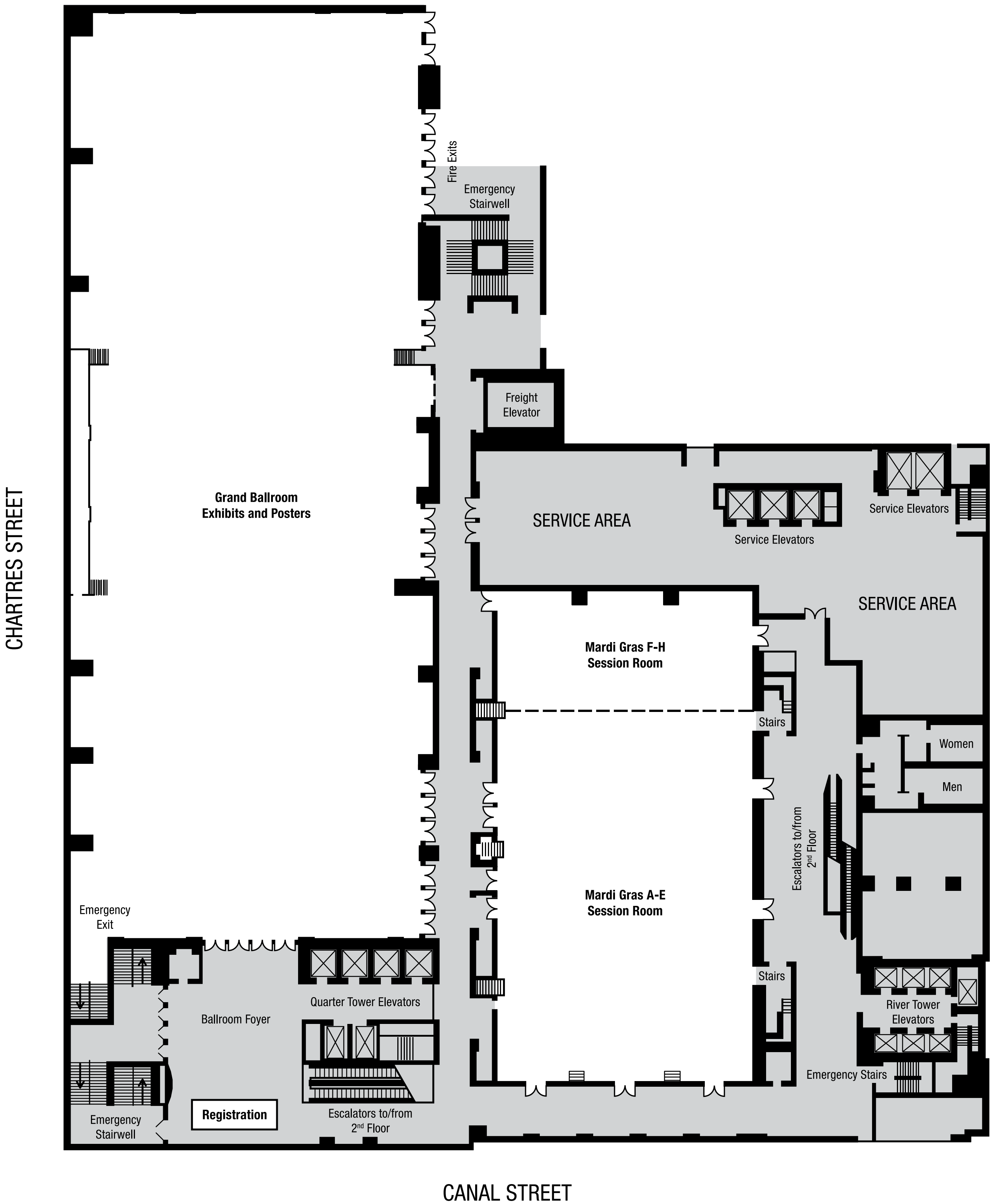

MONDAY
AFTERNOON
2:00

MARDI GRAS A-E

## Session YA
# TUTORIAL: A PRIMER FOR TOPOLOGY IN MAGNETISM

Stephane Mangin, Chair
Universite de Lorraine, Vandoeuvre-lès-Nancy, France

**2:00**

**YA-01**. **Topology in Magnetism: Theory.** ***(Invited)*** *A. Vishvanath*[1] *1. Department of Physics, Harvard University, Cambridge, MA*

**2:50**

**YA-02**. **Topology in Magnetism.** ***(Invited)*** *A. Thiaville*[1] *1. Lab. Physique des Solides, Universite Paris-Sud, Orsay, France*

**3:40**

**YA-03**. **Interplay of Spin Orbit Coupling with Magnetism in Low-Dimensions for Room Temperature Device Applications.** ***(Invited)*** *C. Panagopoulos*[1] *1. Nanyang Technological University, Singapore, Singapore*

TUESDAY
MORNING
8:30

MARDI GRAS A-E

## Session AA
# SYMPOSIUM: SPIN TRANSPORT IN ANTIFERROMAGNETS

Chia-Ling Chien, Chair
Johns Hopkins University, Baltimore, MD

**8:30**

**AA-01**. **Antiferromagnetic spin Seebeck effect.** ***(Invited)*** *S.M. Wu*[1], W. Zhang[1], K.C. Amit[2], P. Borisov[2], J.E. Pearson[1], S. Jiang[1], D. Lederman[2], A. Hoffmann[1] and A. Bhattacharya[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Department of Physics and Astronomy, West Virginia University, Morgantown, WV*

**9:06**

**AA-02**. **Thermal generation of spin current in antiferromagnets and helimagnets.** ***(Invited)*** *S. Seki*[1] *1. Center for Emergent Matter Science (CEMS), RIKEN, Wako, Japan*

**9:42**

**AA-03**. **Enhanced Spin Current through an Antiferromagnetic Insulator.** ***(Invited)*** *W. Lin*[1], K. Chen[2], S. Zhang[2] and C.L. Chien[1] *1. Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD; 2. Department of Physics, University of Arizona, Tucson, AZ*

10:18

**AA-04**. **Orthogonal exchange bias for field-free switching by spin-Hall effect.** ***(Invited)*** *A. van den Brink*[1], G. Vermijs[1], A. Solignac[2], J. Koo[1], J. Kohlhepp[1], H. Swagten[1] and B. Koopmans[1] *1. Physics, Eindhoven University of Technology, Eindhoven, Netherlands; 2. CNRS, CEA Saclay, Gif-sur-Yvette, France*

10:54

**AA-05**. **Magnetization Switching by Spin-Orbit Torque in an Antiferromagnet-Ferromagnet Bilayer System.** ***(Invited)*** *S. Fukami*[1,2], A. Kurenkov[1], W.A. Borders[1], T. Kanemura[1], C. Zhang[1], S. Duttagupta[1] and H. Ohno[1,2] *1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan*

TUESDAY MORNING 8:30 — MARDI GRAS F-H

## Session AB
# FERROMAGNETIC RESONANCE
Andrii Chumak, Chair
TU Kaiserslautern, Kaiserslautern, Germany

8:30

**AB-01**. **Magnetization dynamics in $Co_xGd_{1-x}$ films by time resolved resonant photoemission.** *N. Bergeard*[1], T. Ferté[1], G. Malinowski[3], M. Hehn[2], F. Pressacco[5], F. Sirotti[4] and C. Boeglin[1] *1. IPCMS, Strasbourg, France; 2. Institut Jean Lamour, Vandoeuvre lès Nancy, France; 3. P2M, Institut Jean Lamour, Vandoeuvre-lès-Nancy, France; 4. Synchrotron SOLEIL, Saint Aubin, France; 5. Synchrotron SOLEIL, Saint Aubin, France*

8:42

**AB-02**. **Broadband investigation of temperature-dependent magnetization dynamics in $Ni_{80}Fe_{20}$/Gd heterostructures.** *B. Khodadadi*[1], J. Beik Mohammadi[1], C.K. Mewes[1], T. Mewes[1], M. Manno[4], C. Leighton[4], T. Eagers[3] and C.W. Miller[2] *1. Physics and Astronomy / MINT, University of Alabama, Tuscaloosa, AL; 2. Materials Science, Rochester Institute of Technology, Rochester, NY; 3. Physics, University of South Florida, Tampa, FL; 4. Department of Chemical Engineering and Material Science, University of Minnesota, Minneapolis, MN*

**8:54**

**AB-03**. **Tuning Magnetization Dynamics in Nanometer-Thick Spinel Ferrite Films by Chemical Substitution.** *S. Emori*[1], M.T. Gray[2,1], B.A. Gray[3], H. Jeon[5], B. Howe[3] and Y. Suzuki[1,4] *1. Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA; 2. Materials Science and Engineering, Stanford University, Stanford, CA; 3. Materials and Manufacturing Directorate, Air Force Research Laboratory, Dayton, OH; 4. Applied Physics, Stanford University, Stanford, CA; 5. Electrical Engineering, Wright State University, Dayton, OH*

**9:06**

**AB-04**. **Controlling magnetization dynamics in hybrid heterostructures with first-order phase transitions.** ***(Invited)*** *J. Ramirez*[1], J. de la Venta[2], S. Wang[5], T. Saerbeck[6], A.C. Basaran[7], X. Batlle[3] and I.K. Schuller[4] *1. Department of Physics, Universidad de los Andes, Bogotá, Colombia; 2. Department of Physics, Colorado State University, Fort Collins, CO; 3. Condensed Matter Physics, U. Barcelona, Barcelona, Spain; 4. Department of Physics, UC San Diego, La Jolla, CA; 5. Materials Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA; 6. Institut Max von Laue-Paul Langevin, Grenoble, France; 7. Department of Physics, Gebze Technical University, Gebze, Turkey*

**9:42**

**AB-05**. **Non-monotonic Probability of Thermal Reversal in Low-anisotropy Thin-Film In-plane Nanomagnets.** *N. Kani*[1], S. Rakheja[2] and A. Naeemi[3] *1. Electrical and Computer Engineering, Georgia Institute of Technology, Easton, CT; 2. Electrical and Computer Engineering, New York University, Brooklyn, NY; 3. Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA*

**9:54**

**AB-06**. **Time resolved FMR measurement in non-linear regime on a Co/Pt multilayer dot measured by XMCD.** *N. Kikuchi*[1,3], T. Yomogita[1], D. Kanahara[1], S. Okamoto[1,3], O. Kitakami[1,3], T. Shimatsu[5,6], H. Osawa[2] and M. Suzuki[2] *1. IMRAM, Tohoku University, Sendai, Japan; 2. JASRI/SPring-8, Sayo, Hyogo, Japan; 3. CSRN, Tohoku University, Sendai, Japan; 5. FRIS, Tohoku University, Sendai, Japan; 6. RIEC, Tohoku University, Sendai, Japan*

**10:06**

**AB-07**. **Calculated dependence of FePt damping on external field magnitude and direction.** *W. Hsu*[1], N.A. Natekar[1] and R.H. Victora[1] *1. Electrical and Computer Engineering, University of Minnesota-Twin Cities, Minneapolis, MN*

**10:18**

**AB-08**. **Study of Interfacial Damping In Perpendicular Anisotropy Materials along Multiple Crystal Orientations.** *T. Qu*[1] and R.H. Victora[2] *1. School of Physics & Astronomy, University of Minnesota-Twin Cities, Minneapolis, MN; 2. Electrical Engineering, University of Minnesota, Twin Cities, MN*

**10:30**

**AB-09**. **Micromagnetic Investigations Of Higher Order Anisotropy In Ultra-thin Films With Fluctuating Perpendicular Anisotropy.** *J. Beik Mohammadi*[1*], K. Cole[1], T. Mewes[1] and C.K. Mewes[1] *1. Physics and Astronomy / MINT, University of Alabama, Tuscaloosa, AL*

**10:42**

**AB-10**. **Epitaxial strain induced magneto-elastic anisotropy in ultrathin YIG films grown on GGG and sGGG.** *L. Soumah*[1], C. Carretero[1], E. Jacquet[1], J. Ben Youssef[2], M. Bibes[1], P. Bortolotti[1], V. Cros[1] and A. Anane[1] *1. Unite Mixte de Physique CNRS, Thales, Univ. Paris Sud, Universite Paris-Saclay, Palaiseau, France; 2. Laboratoire de Magnetisme de Bretagne CNRS, Universite de Bretagne Occidentale, Laboratoire de Magnetisme de Bretagne CNRS, Universite de Bretagne Occidentale, Brest, France*

**10:54**

**AB-11**. **Magnetic anisotropy switching by irreversible magnetization rotation in FeCoN films.** *Y. Wu*[1], Y. Yang[2], Z. Yang[2] and J. Ding[1] *1. Materials Science & Engineering, National University of Singapore, Singapore, Singapore; 2. Temasek Laboratories, National University of Singapore, Singapore, Singapore*

**11:06**

**AB-12**. **First principles investigation of the effects of alloy disorder and tetragonal distortion on the Gilbert damping parameter of $Co_2MnSi$.** B. Pradines[1], R. Arras[1] and *L. Calmels*[1] *1. CEMES-CNRS, Toulouse Cedex 4, France*

**11:18**

**AB-13**. **Experimental Investigation Of Temperature-Dependent Gilbert Damping In Permalloy Thin Films.** *Q. Song*[1], Y. Zhao[1], S. Yang[2], W. Yuan[1], T. Su[1], S.S. Parkin[2,3], J. Shi[4] and W. Han[1] *1. International Center for Quantum Materials, Peking University, Beijing, China; 2. IBM Almaden Research Center, San Jose, CA; 3. Max Planck Institute for Microstructure Physics, Halle (Saale), Germany; 4. Department of Physics and Astronomy, University of California Riverside, Riverside, CA*

## Session AC

# MAGNETIC SKYRMIONS I

Sujoy Roy, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA

**8:30**

**AC-01**. **Room temperature chiral magnetic skyrmions in ultrathin magnetic nanostructures.** ***(Invited)*** *O. Boulle*[1], J. Vogel[2], H. Yang[2,1], S. Pizzini[2], D. Chaves[2], A. Locatelli[3], T. Mentes[3], A. Sala[3], L.D. Buda-Prejbeanu[1], O. Klein[1], M. Belmeguenai[5], Y. Roussigné[5], A. Stashkevich[5], S.M. Chérif[5], L. Aballe[4], M. Foerster[4], M. Chshiev[1], S. Auffret[1], I. Miron[1] and G. Gaudin[1] *1. SPINTEC, Univ. Grenoble Alpes CEA CNRS, Grenoble, France; 2. Institut Néel, CNRS, Grenoble, France; 3. Elettra Sincrotrone, Trieste, Italy; 4. ALBA synchrotron, Barcelona, Spain; 5. LSPM, Univ. Paris 13, Villetaneuse, France*

**9:06**

**AC-02**. **Room-temperature creation and spin-orbit torque-induced manipulation of skyrmions in thin film.** *G. Yu*[1], P. Upadhyaya[2], X. Li[1], S. Kim[2], Y. Fan[1], Y. Tserkovnyak[2], P. Khalili[1] and K.L. Wang[1,3] *1. Electrical Engineering, University of California, Los Angeles, Los Angeles, CA; 2. Physics and Astronomy, University of California, Los Angeles, Los Angeles, CA; 3. Materials Science and Engineering, University of California, Los Angeles, Los Angeles, CA*

**9:18**

**AC-03**. **Skyrmion Hall Effect Probed by Direct Time-Resolved X-Ray Microscopy Imaging of Skyrmion Trajectories.** *K. Litzius*[1,2], I. Lemesh[3], B. Krüger[1], L.M. Caretta[3], K. Richter[1], F. Buettner[3], P. Bassirian[1], J. Förster[2], R.M. Reeve[1], M. Weigand[2], I. Bykova[2], H. Stoll[2], G.A. Schuetz[2], G. Beach[3] and M. Kläui[1] *1. Institute of Physics, Johannes Gutenberg University, Mainz, Germany; 2. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 3. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

**9:30**

**AC-04**. **Magnetotransport detection of tunable skyrmions in Ir/Fe/Co/Pt multilayers.** *M. Raju*[1], A.K. Tan[1], A. Petrovic[1], P. Ho[2], L. Huang[2], A. Oyarce[2], A. Yagil[3], A. Almoalem[3], O. Auslaender[3], A. Soumyanarayanan[1,2] and C. Panagopoulos[1] *1. Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 2. Data Storage Institute, Singapore, Singapore; 3. Department of Physics, Technion - Israel Institute of Technology, Technion City - Haifa, Israel*

**9:42**

**AC-05**. **Tuning magnetic skyrmions in multilayers with perpendicular magnetic anisotropy.** *X. Wang*[1], W. Jiang[2], S. Zhang[2], Q. Wang[2], K. Buchanan[3], J.E. Pearson[2], C. Phatak[2], A. Petford-Long[2], A. Hoffmann[2], S. te Velthuis[2] and X. Cheng[1] *1. Department of Physics, Bryn Mawr College, Bryn Mawr, PA; 2. Materials Science Division, Argonne National Laboratory, Argonne, IL; 3. Colorado State University, Fort Collins, CO*

**9:54**

**AC-06**. **Investigating skyrmion structure using Lorentz microscopy.** *S. McVitie*[1], D. McGrouther[1], R.J. Lamb[1], M. Krajnak[1], S. McFadzean[1], R. Stamps[1], A. Leonov[3,4], A. Bogdanov[3,4] and Y. Togawa[2,1] *1. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. Osaka Prefecture University, Sakai, Japan; 3. IFW, Dresden, Germany; 4. Centre for Chiral Science, Hiroshima University, Hiroshima, Japan*

**10:06**

**AC-07**. **An Energetic Treatment of Chiral Magnetic Bubble Domains Influenced by the Dzyaloshinskii-Moriya Interaction.** *V.M. Sokalski*[1], D. Lau[1], V. Sundar[2] and J. Zhu[2,3] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA; 2. Electrical & Computer Engineering, Carnegie Mellon University, Pittsburgh, PA; 3. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA*

**10:18**

**AC-08**. **Magnetic and transport characterization of nanostructured skyrmion based multilayers.** *D. Maccariello*[1], N. Reyren[1], K. Garcia-Hernandez[1], W. Legrand[1], C. Moreau-Luchaire[1], K. Bouzehouane[1], V. Cros[1] and A. Fert[1] *1. Unité Mixte de Physique CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France*

**10:30**

**AC-09**. **Lorentz-TEM imaging of Néel skyrmions in exchange coupled multilayers.** *S. Pollard*[1], J.A. Garlow[2,3], J. Yu[1], Y. Zhu[2] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, NY; 3. Material Science and Engineering Department, Stony Brook University, Stony Brook, NY*

**10:42**

**AC-10**. **Possible Dzyaloshinskii-Moriya Interaction in BCC FeCoMn Films.** *R.J. Snow*[1], H. Bhatkar[1], A.T. N'Diaye[2], E. Arenholz[2] and Y.U. Idzerda[1] *1. Physics, Montana State University, Bozeman, MT; 2. Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA*

**10:54**

**AC-11**. **Mapping the Skyrmion Phase Diagram in MBE-grown FeGe Thin Films.** *A. Ahmed*[1], S. Dunsinger[1], A. Thieken[1], M. Randeria[1] and R. Kawakami[1] *1. Physics, The Ohio State University, Columbus, OH*

**11:06**

**AC-12**. **First-principles simulation and low-energy effective modeling of three-dimensional skyrmion in MnGe.** *H. Choi*[1], Y. Tai[1] and J. Zhu[1] *1. Los Alamos Ntional Laboratory, Los Alamos, NM*

TUESDAY MORNING 8:30 | LA GALERIES 3

## Session AD
# NEW MAGNETIC MATERIALS
Steven Disseler, Chair
NIST Center for Neutron Research, Gaithersburg, MD

**8:30**

**AD-01**. **Magnetic and transport measurements in nanoparticle-spin crossover molecules hybrid nanostructures.** *S. Usmani*[1], J. Carrey[1], S. Tricard[1], J. Sanchez Costa[3], G. Molnar[2], L. Salmon[2], B. Chaudret[1] and A. Bousseksou[2] *1. Laboratoire de Physique et Chimie des Nano-objets - INSA, Toulouse, France; 2. Laboratoire de Chimie de Coordination, Toulouse, France; 3. IMDEA Nanoscience, Madrid, Spain*

**8:42**

**AD-02**. **Exchange and Dzyaloshinskii-Moriya interactions in bulk FeGe: Effects of atomic vacancies.** *J. Loh*[1] and G. Chee Kwan[1] *1. Materials Science & Engineering, Institute of High Performance Computing, Singapore, Singapore*

**8:54**

**AD-03**. **Combinatorial XMCD on $Fe_xCo_y(V,Mn)_{1-(x+y)}$ ternary systems.** *A.T. N'Diaye*[1], S.W. Fackler[2,3], T. Gao[2], Y. Iwasaki[2], A. Mehta[4], I. Takeuchi[2] and E. Arenholz[1] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 2. Materials Science & Engineering, University of Maryland, College Park, MD; 3. Joint Center for Artificial Photosynthesis, Lawrence Berkeley National Laboratory, Berkeley, CA; 4. Stanford Synchrotron Radiation Lightsource, SLAC National Accelerator Laboratory, Menlo Park, CA*

**9:06**

**AD-04**. **Unusual Nature of the Martensite and Ferromagnetic Transitions in $Ni_2Mn_{0.4-x}Fe_xCr_{0.6}Ga$ Heusler Alloys.** *J.A. Brock*[1*] and M.U. Khan[1] *1. Department of Physics, Miami University, Oxford, OH*

**9:18**

**AD-05**. **High-temperature Shell-ferromagnetic Precipitates in Off-stoichiometric Martensitic Ni-Mn-based Heuslers Produced by Temper-annealing under Magnetic Field.** A. Cakir[2,1] and *M. Acet*[1] *1. Physics, Duisburg-Essen University, Duisburg, Germany; 2. Department of Metallurgical and Materials Engineering, Mugla University, Mugla, Turkey*

9:30

**AD-06**. **Shell-ferromagnetism in a Ni-Mn-based Off-stoichiometric Heusler Studied by Ferromagnetic Resonance.** *F. Scheibel*[1], D. Spoddig[1], R. Meckenstock[1], A. Cakir[2], M. Farle[1,3] and M. Acet[1] *1. Faculty of Physics, University Duisburg-Essen, Duisburg, Germany; 2. Metallurgical and Materials Engineering, Muğla University, Muğla, Turkey; 3. Center for Functionalized Magnetic Materials, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation*

9:42

**AD-07**. **Magneto-photothermal effects of pegylated Magnetite nanoparticles for bimodal Cancer therapy.** *S.A. Shah*[1], M. Khan[2], M. Hashmi[3], S. Awan[4], M. Naeem[5] and M. Arshad[6] *1. Physics, Forman Christian College (University), Lahore, Pakistan; 2. Polymer Engineering, University of the Punjab, Lahore, Pakistan; 3. Department of Applied Sciences, Superior University, Lahore, Pakistan; 4. Physics, COMSATS, Islamabad, Pakistan; 5. Physics, Islamic International University, Islamabad, Pakistan; 6. Nanoscience division, National Center for Physics, Islamabad, Pakistan*

9:54

**AD-08**. **Crystal structure and magnetic behavior of new ternary $Ho_5Ni_2X_3$ intermetallics (X = Si, Ge).** *A. Provino*[1,2], P. Manfrinetti[1,2], C. Ritter[3] and M. Pani[1,2] *1. Department of Chemistry, University of Genova, Genova, Italy; 2. Institute SPIN-CNR, Genova, Italy; 3. Institut Laue-Langevin, Grenoble, France*

10:06

**AD-09**. **Direct Magnetic Measurement of Ferromagnetic Two-Dimensional Materials.** *W. Liu*[1,2], K. Zhang[3], N. Maltby[2], J. Robinson[1], J. Robinson[3], Y. Xu[2] and S.S. Dhesi[4] *1. Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom; 2. Electronics Department, University of York, York, United Kingdom; 3. Department of Materials Science and Engineering, Pennsylvania State University, Pennsylvania, PA; 4. Diamond Light Source, Didcot, United Kingdom*

10:18

**AD-10**. **A New Class Of Inherently Nanolaminated Magnetic Materials: Magnetic MAX Phases.** ***(Invited)*** *R. Salikhov*[1], Q. Tao[2], D. Weller[1], J. Rosén[2], U. Wiedwald[1] and M. Farle[1,3] *1. Faculty of Physics and Center for Nanointegration (CENIDE), University of Duisburg-Essen, 47057 Duisburg, Germany; 2. Thin Film Physics, Department of Physics, Chemistry and Biology (IFM), Linköping University, Linköping, Sweden; 3. Center for Functionalized Magnetic Materials, Immanuel Kant Baltic Federal University, 236041 Kaliningrad, Russian Federation*

10:54

**AD-11**. **Magnetic properties of monolayer and multilayer $MoS_2$ films influenced by thickness and doping.** D. Wang[1], W. Shi[1], J. Hao[1], F. Chen[1], L. Zhang[1], Y. Zhu[1], *R. Peng*[1] and M. Wang[1] *1. Nanjing University, Nanjing, China*

**11:06**

**AD-12**. **Sulfur-doping Induced Magnetism In Graphene: Insights From Experiment And Electronic-structure Calculations.** J. Tucek[1], *P.S. Blonski*[1], Z. Sofer[2], P. Simek[2], M. Petr[1], M. Pumera[3], M. Otyepka[1] and R. Zboril[1] *1. Department of Physical Chemistry, Regional Centre of Advanced Technologies and Materials, Palacky University Olomouc, Olomouc, Czech Republic; 2. Department of Inorganic Chemistry, University of Chemistry and Technology Prague, Prague, Czech Republic; 3. Division of Chemistry and Biological Chemistry, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore*

**11:18**

**AD-13**. **Non Magnetic Chemical Tune the Magnetic Properties of Graphene Derivatives.** *D. Lee*[1], I. Nekrashevich[1], K. Martirosyan[2], H. Lee[3], T. Lee[3], D. Litvinov[1] and C. Dannangoda[2] *1. Materials Engineering, University of Houston, Houston, TX; 2. Physics & Astronomy, University of Texas, Brownsville, TX; 3. Chemistry, University of Houston, Houston, TX*

**11:30**

**AD-14**. **Withdrawn**

TUESDAY MORNING 8:30 — LA GALERIES 4-5

## Session AE
# ULTRAFAST SWITCHING
Christine Boeglin, Chair
IPCMS, Strasbourg, France

**8:30**

**AE-01**. **Electric Current Induced Ultrafast Demagnetization.** *R. Wilson*[1,2], Y. Yang[1], J. Gorchon[3], C.A. Lambert[1], S. Salahuddin[1] and J. Bokor[1] *1. EECS Department, University of California, Berkeley, CA; 2. Mechanical Engineering and Materials Science Program, University of California, Riverside, CA; 3. Lawrence Berkeley National Laboratory, Berkeley, CA*

**8:42**

**AE-02**. **Ultrafast Magnetic Switching of GdFeCo via Electronic Heat Currents.** *R. Wilson*[1,2], J. Gorchon[3], C.A. Lambert[2], Y. Yang[2], S. Salahuddin[2] and J. Bokor[2,3] *1. Mechanical Engineering and Materials Science Program, University of California, Riverside, CA; 2. EECS Department, University of California, Berkeley, CA; 3. Lawrence Berkeley National Laboratory, Berkeley, CA*

**8:54**

**AE-03**. **Insights into ultrafast all-optical spin switching through a ferromagnetically coupled two-spin system.** *G. Zhang*[1], Y. Bai[1] and T.F. George[2] *1. Indiana State University, Terre Haute, IN; 2. University of Missouri-St Louis, St Louis, MO*

**9:06**

**AE-04**. **Two types of all-optical magnetization switching mechanisms using femtosecond laser pulses.** M. El Hadri[1], P. Pirro[1], C.A. Lambert[1], S. Petit-Watelot[1], Y. Quessab[1], M. Hehn[1], F. Montaigne[1], *G. Malinowski*[1] and S. Mangin[1] *1. Institut Jean Lamour, Vandoeuvre-lès-Nancy, France*

**9:18**

**AE-05**. **Model for multi-shot all-thermal all-optical switching in ferromagnets.** J. Gorchon[1,2], *Y. Yang*[2] and J. Bokor[1,2] *1. Lawrence Berkeley National Laboratory, Berkeley, CA; 2. University of California, Berkeley, CA*

**9:30**

**AE-06**. **On the Possibility of the Ultra Fast Magnetisation Switching in TbCo Under Heating Mechanism.** *O. Chubykalo-Fesenko*[1], R. Moreno[1] and T.A. Ostler[2] *1. Instituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. Physique des Matériaux et Nanostructures, Université de Liège, Liège, Belgium*

**9:42**

**AE-07**. **Modeling All Optical Switching in Granular FePt Media.** *M. Menarini*[1], L.J. Sham[2] and V. Lomakin[3] *1. Electrical and Computer Engineering, University of California San Diego, La Jolla, CA; 2. Physics, University of California San Diego, La Jolla, CA; 3. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA*

**9:54**

**AE-08**. **All-optical switching of FePt nanoparticle recording medium with inverse Faraday effect.** R. John[1], M. Berritta[2], D. Hinzke[3], C. Mueller[4], T. Santos[5], P. Nieves[6], H. Ulrichs[7], J. Walowski[1], O. Chubykalo-Fesenko[6], J. McCord[4], P. Oppeneer[2], U. Nowak[3] and *M. Münzenberg*[1] *1. Institute of Physics, Ernst-Moritz-Arndt Univeristy, Greifswald, Germany; 2. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 3. Physics Department, University of Konstanz, Konstanz, Germany; 4. Institute for Materials Science, CAU Kiel, Kiel, Germany; 5. Western Digital Corporation, San Jose, CA; 6. Insituto de Ciencia de Materiales de Madrid, Madrid, Spain; 7. I. Phys. Institut, Georg-August-University, Goettingen, Germany*

**10:06**

**AE-09**. **Ultrafast Magnetization Dynamics In Ferrimagnetic $DyCo_5$.** *A. Donges*[1], S. Khmelevskyi[2], A. Deak[3], R. Abrudan[4,5], F. Radu[4], I. Radu[4,6], L. Szunyogh[3] and U. Nowak[1] *1. Physics Department, University of Konstanz, Konstanz, Germany; 2. Vienna University of Technology, Vienna, Austria; 3. Budapest University of Technology and Economics, Budapest, Hungary; 4. Helmholtz-Zentrum Berlin für Materialien und Energie, Berlin, Germany; 5. Ruhr-Universität Bochum, Bochum, Germany; 6. Technical University Berlin, Berlin, Germany*

**10:18**

**AE-10. Ultrafast electron, spin, and lattice dynamics in half-metallic $Fe_3O_4$ thin films.** *X. Lu*[1], B. Liu[2], G. Li[1], Y. Wang[1], H. Ling[3], J. Sizeland[1], T. Ostler[1], J. Wu[1], X. Ruan[2], V. Lazarov[1], R. Chantrell[1] and Y. Xu[3] *1. Department of Physics, University of York, York, United Kingdom; 2. Jiangsu Provincial Key Laboratory of Advanced Photonic and Electronic Materials, Collaborative Innovation Center of Advanced Microstructures, School of Electronic Science and Engineering, Nanjing University, Nanjing, China; 3. Department of Electronics, University of York, York, United Kingdom*

**10:30**

**AE-11. Single-shot All-Optical Switching of ferromagnetic films.** Y. Yang[1], J. Gorchon[2], *C.A. Lambert*[1], R. Wilson[1,3], S. Salahuddin[1,2] and J. Bokor[1,2] *1. University of California, Berkeley, CA; 2. Lawrence Berkeley National Laboratory, Berkeley, CA; 3. Mechanical Engineering, University of California, Riverside, CA*

**10:42**

**AE-12. All-optical control of magnetization in $He^+$-irradiated ferromagnetic Co/Pt multilayers.** *M. El Hadri*[1], M. Hehn[1], G. Malinowski[1], C.A. Lambert[1], C. Beigne[3], D. Ravelosona[2] and S. Mangin[1] *1. Institut Jean Lamour, Vandoeuvre-lès-Nancy, France; 2. Institut d'Electronique Fondamentale, Orsay, France; 3. Univ. Grenoble Alpes – CEA Grenoble, Grenoble, France*

**10:54**

**AE-13. Ultrafast Magneto-Acoustic in Magnetostrictive Materials.** *A. Hillion*[1], T. Parpiiev[3], V. Vlasov[3], V. Temnov[3], V. Polewczyk[1], S. Andrieu[1], A. Anane[2], V. Gusev[3], K. Dumesnil[1], N. Bergeard[1], G. Malinowski[1] and T. Pezeril[3] *1. Institut Jean Lamour, Universite de Lorraine, Vandoeuvre, France; 2. CNRS Thales, Palaiseau, France; 3. IMMM, Le Mans, France*

**11:06**

**AE-14. Off-Resonant Excitation of Cobalt Thin Film Magnetization by Intense Single-Cycle THz Pulses: Computer Simulations and Experiments.** *A. Donges*[1], M. Shalaby[2], C. Vicario[2], K. Carva[3], P. Oppeneer[4], C. Hauri[2] and U. Nowak[1] *1. Physics Department, University of Konstanz, Konstanz, Germany; 2. SwissFEL, Paul Scherrer Institute, Villigen PSI, Switzerland; 3. Dept. Condensed Matter Physics, Charles University, Prague, Czech Republic; 4. Uppsala University, Uppsala, Sweden*

**11:18**

**AE-15. Domain size criterion for the observation of all-optical helicity-dependent switching in magnetic thin films.** M. El Hadri[1], M. Hehn[1], P. Pirro[1], C.A. Lambert[1], *J. Rojas-Sanchez*[1], G. Malinowski[1], E.E. Fullerton[2] and S. Mangin[1] *1. Institut Jean Lamour, Vandoeuvre-lès-Nancy, France; 2. UC San Diego 0401, La Jolla, CA*

## Session AF
# MRAM AND MAGNETIC LOGIC DEVICES I

Alexey Khvalkovskiy, Chair
Crocus Nanoelectronics, LLC, Dolgoprudny, Russian Federation

**8:30**

**AF-01**. **Perpendicularly-Magnetized Double Magnetic Tunnel Junctions for Spin-Torque MRAM.** ***(Invited)*** *G. Hu*[1,2], J. Lee[2], J.J. Nowak[1,2], J. Sun[1,2], J. Harms[1], A.J. Annunziata[1,2], S. Brown[1,2], W. Chen[1], Y. Kim[2], G. Lauer[1,2], N. Marchack[1,2], S. Murthy[1], E. O'Sullivan[1,2], J. Park[2], M. Reuter[1,2], R. Robertazzi[1,2], P.L. Trouilloud[1,2], Y. Zhu[1,2] and D. Worledge[1,2] *1. IBM-Micron MRAM Alliance, IBM TJ Watson Research Center, Yorktown Heights, NY; 2. IBM-Samsung MRAM Alliance, IBM TJ Watson Research Center, Yorktown Heights, NY*

**9:06**

**AF-02**. **Dual-Referenced Composite Free Layer Design for Improving Switching Efficiency of Spin-Transfer Torque RAM.** *R.C. Bell*[1], J. Hu[1] and R.H. Victora[1] *1. Electrical and Computer Engineering, University of Minnesota at Twin-Cities, Minneapolis, MN*

**9:18**

**AF-03**. **Thermally robust perpendicular magnetized magnetic tunnel junction with a large exchange coupling using Ir spacer.** *K. Nakamura*[1], H. Maehara[2], H. Tomita[1], Y. Tanaka[1], T. Kitada[1], S. Furukawa[1] and N. Watanabe[1] *1. Tokyo Electron Yamanashi Limited, Nirasaki City, Yamanashi, Japan; 2. Tokyo Electron Limited, Tokyo, Japan*

**9:30**

**AF-04**. **Second order anisotropy contribution in perpendicular magnetic tunnel junctions.** *A. Timopheev*[1], R.C. Sousa[1], M. Chshiev[1], T.H. Nguyen[1] and B. Diény[1] *1. CEA-INAC / CNRS, SPINTEC, Univ. Grenoble Alpes, Grenoble, France*

**9:42**

**AF-05**. **Giant Interfacial Perpendicular Magnetic Anisotropy in MgO/CoFe/Capping Layer Structure.** *S. Peng*[1,2], W. Zhao[1,2], J. Qiao[1,2], L. Su[1,2], J. Zhou[1,2], H. Yang[3,4], Q. Zhang[1,5], Y. Zhang[1,2], C. Grezes[6], P.K. Amiri[6,7] and K.L. Wang[6] *1. Fert Beijing Institute, Beihang University, Beijing, China; 2. School of Electronic and Information Engineering, Beihang University, Beijing, China; 3. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 4. Univ. Grenoble Alpes, INAC-SPINTEC, CNRS, SPINTEC, CEA, INAC-SPINTEC, F-38000 Grenoble, France; 5. School of Materials Science and Engineering, Beihang University, Beijing, China; 6. Department of Electrical Engineering, University of California, Los Angeles, Los Angeles, CA; 7. Inston Inc., Los Angeles, CA*

**9:54**

**AF-06**. **Broadband ferromagnetic resonance study of perpendicular magnetic tunnel junctions.** *D.B. Gopman*[1], C. Dennis[1], B. McMichael[2], X. Hao[3], Z. Wang[3], H. Gan[3], X. Wang[3], Y. Zhou[3] and Y. Huai[3] *1. Materials Science & Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD; 2. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD; 3. Avalanche Technology, Fremont, CA*

**10:06**

**AF-07**. **Ferromagnetic resonance study of composite Co/Ni - FeCoB free layers with perpendicular anisotropy.** *T. Devolder*[1], E. Liu[2], J. Swerts[2], S. Couet[2], S. Mertens[2], T. Lin[2], S. Van Elshocht[2], G.S. Kar[2], A. Furnemont[2] and J. De Boeck[2] *1. IEF, Orsay, France; 2. Imec, Leuven, Belgium*

**10:18**

**AF-08**. **Spin-transfer-torque Switching in a Free Layer with Higher-order Perpendicular Magnetic Anisotropy.** *R. Matsumoto*[1], H. Arai[2,1], S. Yuasa[1] and H. Imamura[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. PRESTO, Japan Science and Technology Agency (JST), Kawaguchi, Japan*

**10:30**

**AF-09**. **Instability Mechanism for STT-RAM Switching: Normal Mode Analysis.** *P.B. Visscher*[1], K. Munira[1] and R.J. Rosati[1,2] *1. Physics and MINT Center, University of Alabama, Tuscaloosa, AL; 2. Physics, University of Texas, Austin, TX*

**10:42**

**AF-10**. **Origin of variation of shift field via annealing at 400°C in a perpendicular-anisotropy magnetic tunnel junction with [Co/Pt]-multilayers based synthetic ferrimagnetic reference layer.** *H. Honjo*[1,5], S. Sato[1,5], S. Ikeda[1,3], H. Sato[3,1], T. Watanebe[1,5], S. Miura[1,5], T. Nasuno[1,5], Y. Noguchi[1,5], M. Yasuhira[1,5], T. Tanigawa[1,5], H. Koike[1,3], M. Muraguchi[1,2], M. Niwa[1,5], K. Ito[1], H. Ohno[3,4] and T. Endoh[1,2] *1. Center for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan; 2. Graduate School of Engineering, Tohoku University, Sendai, Japan; 3. Center for Spintronics Integrated Systems, Sendai, Japan; 4. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 5. JST ACCEL, Sendai, Japan*

**10:54**

**AF-11**. **Electrical magnetization switching in CoFeB/MgO magnetic tunnel junctions in nanosecond regime.** *N. Ohshima*[1], J. Llandro[1], H. Sato[2,3], S. Kanai[1,2], S. Fukami[1,2], F. Matsukura[2,4] and H. Ohno[1,2] *1. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan; 3. Center for Spintronics Research Network, Tohoku University, Sendai, Japan; 4. WPI Advanced Institute for Materials Research (WPI-AIMR), Tohoku University, Sendai, Japan*

**11:06**

**AF-12. Time Resolved Studies of Spin-Torque Switching in Perpendiclarly Magnetized Magnetic Tunnel Junction Devices.** *C. Hahn*[1], A.D. Kent[1], G. Wolf[2], B. Kardasz[2], S. Watts[2] and M. Pinarbasi[2] *1. Department of Physics, New York University, New York, NY; 2. Spin Transfer Technologies, Inc., Fremont, CA*

**11:18**

**AF-13. Characterization of Thermal Conductance in MgO-based Magnetic Tunnel Junction by Picosecond Time-domain Thermoreflectance.** *N. Sato*[1], R. Cheaito[2], R.M. Whtie[3], M. Asheghi[2], K.E. Goodson[2] and S.X. Wang[3,1] *1. Department of Electrical Engineering, Stanford University, Stanford, CA; 2. Department of Mechanical Engineering, Stanford University, Stanford, CA; 3. Department of Materials Science & Engineering, Stanford University, Stanford, CA*

TUESDAY MORNING 8:30 | STUDIO 9-10

## Session AG
# BIOCHEMICAL AND BIOMEDICAL APPLICATIONS I
Stephen Russek, Chair
NIST, Boulder, CO

**8:30**

**AG-01. The removal of uranium from contaminated water by specific chelator grafted onto magnetic nanoparticles.** E. Mazario[1], A.S. Helal[3,1], A. Mayoral[4], P. Decorse[1], A. Chevillot[1], S. Novak[1], C. Perruchot[1], C. Lion[1], R. Losno[5,2], S. Ammar[1], J. El Hage Chahine[1] and *M. Hemadi*[1] *1. ITODYS, Université Paris Diderot, PRES Sorbonne Paris Cité, CNRS UMR-7086, Paris, France; 2. Université Paris Diderot, Paris, France; 3. Nuclear Materials Authority, Cairo, Egypt; 4. Instituto de Nanociencia de Aragón (INA) - Universidad de Zaragoza, Madrid, Spain; 5. Institut de Physique du Globe de Paris, Paris, France*

**8:42**

**AG-02. Magnetic characteristic measurements of ethanol-water mixtures using a hybrid-type HTS-SQUID magnetometer.** *K. Tsukada*[1], Y. Matsunaga[1], R. Isshiki[1], Y. Nakamura[1], K. Sakai[2] and T. Kiwa[1] *1. Okayama University, Okayama, Japan; 2. Graduate School of Natural Science and Technology, Okayama University, Okayama, Japan*

**8:54**

**AG-03. Magnetic Particle Relaxometer For Characterization Of Magnetic Nanoparticle Tracers For Magnetic Particle Imaging.** *N. Garraud*[1], R. Dhavalikar[2], D. Prestridge[3], D.P. Arnold[1] and C. Rinaldi[2,3] *1. Electrical and Computer Engineering, University of Florida, Gainesville, FL; 2. Department of Chemical Engineering, University of Florida, Gainesville, FL; 3. J.Crayton Pruitt Family Department of Biomedical Engineering, University of Florida, Gainesville, FL*

9:06

**AG-04**. **Understanding Particle Stability and Interaction With Tissue Using a Magnetic Particle Spectrometer.**
*R. Dhavalikar*[1], A.C. Bohorquez[3], D. Prestridge[3], N. Garraud[2], A. Chiu Lam[1], D.P. Arnold[2] and C. Rinaldi[1,3] *1. Chemical Engineering, University of Florida, Gainesville, FL; 2. Electrical and Computer Engineering, University of Florida, Gainesville, FL; 3. J.Crayton Pruitt Family Department of Biomedical Engineering, University of Florida, Gainesville, FL*

9:18

**AG-05**. **A Room Temperature Ultrasensitive Magnetoelectric Susceptometer for the Quantitative Tissue Iron Detection.**
H. Xi[1], X. Qian[1], M. Lu[1], L. Mei[1], S. Rupprecht[2], Q. Yang[2,3] and *Q. Zhang*[1,4] *1. Electrical Engineering, The Pennsylvania State Univeristy, University Park, PA; 2. Radiology, Penn State College of Medicine, Hershey, PA; 3. Neurosurgery, Penn State College of Medicine, Hershey, PA; 4. Materials Research Insititue, The Pennsylvania State Univeristy, University Park, PA*

9:30

**AG-06**. **MRI Based Susceptibility Mapping for In-Vivo Iron and Blood Oximetry Measurements.** *H. Erdevig*[1,2], S.E. Russek[1], S. Carnicka[1], K. Stupic[1] and K.E. Keenan[1] *1. National Institute of Standards and Technology, Boulder, CO; 2. Department of Physics, University of Colorado Boulder, Boulder, CO*

9:42

**AG-07**. **Ultrasensitive detection of single iron oxide nanoparticles by nucleation of domain walls in CoFeB nanostructures.**
*J. Wells*[1], A. Fernandez-Scarioni[3], H.W. Schumacher[3], R. Mansell[2], R. Cowburn[2] and O. Kazakova[1] *1. National Physical Laboratory, Teddington, United Kingdom; 2. University of Cambridge, Cambridge, United Kingdom; 3. Physikalisch-Technische Bundesanstalt, Braunschweig, Germany*

9:54

**AG-08**. **High throughput Salmonella detection with Tunnel Magnetoresistance sensors.** *M.A. Torija*[1], L. Maldonado-Camargo[2], C. Rinaldi[3], S. Sreevatsan[4], M. Tondra[5] and P. Mueller[1] *1. Ad tech, NVE Corporation, Eden Prairie, MN; 2. University of Florida, Gainsville, FL; 3. University of Florida, Gainsville, FL; 4. University of Minnesota, St. Paul, MN; 5. Diagnostic Biosensors, St. Paul, MN*

10:06

**AG-09**. **Magnetic Tunneling Junction - Based Platform For Recording Neuronal Activity.** P.P. Sharma[1], G. Gervasoni[2], E. Albisetti[1], D. Moretti[3], F. D'Ercoli[1], N. Forte[3], G. Ferrari[2], P. Baldelli[3], M. Sampietro[2], F. Benfenati[3], R. Bertacco[1] and *D. Petti*[1] *1. Physics, Politecnico di Milano, Milano, Italy; 2. Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Milano, Italy; 3. Istituto Italiano di Tecnologia, Genova, Italy*

**10:18**

**AG-10**. **Magnetic Micro-/Nano- Structures for Bio-Manipulations.** ***(Invited)*** H. Huang[1], C. Huang[1] and *Z. Wei*[1] *1. National Tsing Hua University, Hsinchu, Taiwan*

**10:54**

**AG-11**. **A Magnetic Probe Equipped with Small-Tip Permanent Magnet for Sentinel Lymph Node Biopsy.** *M. Kaneko*[1], K. Ohashi[1], S. Chikaki[1], A. Kuwahata[1], M. Shiozawa[2], M. Kusakabe[1] and M. Sekino[1] *1. University of Tokyo, Bunkyo-ku, Japan; 2. Ibaraki Prefectural Central Hospital, Ibaraki, Japan*

**11:06**

**AG-12**. **Simulation of Transcranial Magnetic Stimulation in the Presence of Deep Brain Stimulation Probes for Treatment of Parkinson's Disease.** *F. Syeda*[1], K. Holloway[2] and R.L. Hadimani[1,3] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA; 2. Department of Neurosurgery, Virginia Commonwealth University, Richmond, VA; 3. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA*

**11:18**

**AG-13**. **Helical microrobot with navigating, drug-delivery and drilling capabilities in human blood vessels by external rotating magnetic field.** J. Nam[1], W. Lee[1], B. Jang[1] and *G. Jang*[1] *1. Dept of Mechanical Convergence Engineering, Hanyang University, Seoul, The Republic of Korea*

TUESDAY MORNING 8:30 — STUDIO 7-8

## Session AH
# NANOWIRES AND NANOPARTICLES I
Ping Liu, Chair
University of Texas-Arlington, Arlington, TX

**8:30**

**AH-01**. **Magnetization Reversal of Multisegmented FeCo/Cu Cylindrical Nanowires.** C. Bran[1], J. Meier[1], E.M. Palmero[1], R. Perez[1], E. Berganza[1], A. Asenjo[1], L.A. Rodriguez[2], C. Gatel[2], D.F. Reyes[2], E. Snoek[2], J.A. Fernandez-Roldan[1], O. Chubykalo-Fesenko[1] and *M. Vázquez*[1] *1. Insituto de Ciencia de Materiales de Madrid, Madrid, Spain; 2. CEMES-CNRS, Toulouse, France*

**8:42**

**AH-02**. **Magnetic structure of 3D Domain Wall in modulated cylindrical nanowires.** *I. Ivanov*[1], S. Lopatin[2], A. Chuvilin[3] and J. Kosel[1] *1. Sensing, Magnetism, and Microsystems Research Group, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 2. King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 3. EM Lab, CIC nanoGUNE, San Sebastian, Spain*

**8:54**

**AH-03**. **Visualization of magnetization in CoFe nanofibers by Lorentz TEM.** S. Zhang[1], Z. Zhou[2], G. Grocke[2], A. Petford-Long[1], Y. Liu[3], X. Chen[2] and *C. Phatak*[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Energy Sciences Division, Argonne National Laboratory, Lemont, IL; 3. Center for Nanoscale Materials, Argonne National Laboratory, Lemont, IL*

**9:06**

**AH-04**. **Nanoscale study of the geometry-induced spin configuration in diameter-modulated cylindrical FeCo-based nanowires.** *L.A. Rodríguez González*[1], C. Bran[2], D.F. Reyes Vasquez[1], C. Gatel[1], E. Berganza[2], M. Vazquez[2], A. Asenjo[2] and E. Snoeck[1] *1. CEMES-CNRS 29 rue Jeanne Marvig, B.P. 94347 F-31055, Toulouse, France; 2. ICMM-CSIC, Madrid, Spain*

**9:18**

**AH-05**. **Magnetization Distribution in Cylindrical Co-based Nanowires with Tailored Anisotropy.** *C. Bran*[1], E.M. Palmero[1], R. Perez del Real[1], A. Asenjo[1], A. Fraile Rodriguez[2] and M. Vázquez[1] *1. Institute of Materials Science of Madrid (ICMM-CSIC), Madrid, Spain; 2. Departament de Física de la Matèria Condensada and Institut de Nanociència i Nanotecnologia (IN2UB), Universitat de Barcelona, Barcelona, Spain*

**9:30**

**AH-06**. **Imaging Orthoradial Domains in Electroless-deposited Magnetic Nanotubes.** M. Stano[1], S. Schäfer[2], *A. Wartelle*[1], J. Toussaint[1], A. Sala[3], T. Mentes[3], A. Locatelli[3], M. Rioult[4], R. Belkhou[4], W. Ensinger[2] and O. Fruchart[1,5] *1. Institut Néel, Grenoble, France; 2. Technische Universität Darmstadt, Darmstadt, Germany; 3. Elettra – Sincrotrone Trieste S.C.p.A, Trieste, Italy; 4. Synchrotron SOLEIL, Gif-sur-Yvette, France; 5. Spintec, CNRS, Grenoble, France*

**9:42**

**AH-07**. **Thermal Switching of Magnetization States in $Fe_3O_4$ Nanocubes.** *B. Parks*[1], A.M. Abdelgawad[2], F. Fan[1], A. Wu[1] and S. Majetich[1] *1. Physics, Carnegie Mellon University, Pittsburgh, PA; 2. Materials Science Engineering, Carnegie Mellon University, Pittsburgh, PA*

**9:54**

**AH-08**. **Structure and Magnetism of CoN Nanoparticles.** *B. Balasubramanian*[1,2], Y. Jin[1,2], X. Xu[1,2], S. Valloppilly[2] and D.J. Sellmyer[1,2] *1. Physics and Astronomy, University of Nebraska, Lincoln, NE; 2. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE*

**10:06**

**AH-09**. **Magnetic Field Assisted Cobalt Nanoparticle Synthesis.** *A. Mosey*[1], B. Gaire[1], R. Cheng[1], J. Kim[2] and J. Ryu[2] *1. Physics, Indiana University Purdue University Indianapolis, Indianapolis, IN; 2. Mechanical Engineering, Indiana University Purdue University Indianapolis, Indianapolis, IN*

**10:18**

**AH-10**. **Enhancement of Orbital and Spin Moments in Co Clusters Doped with Gold or Rhodium.** D. Dieleman[1], M. Tombers[2], L. Peters[1], J. Meyer[2], J. Jalink[1], M. Neeb[3], S. Peredkov[4], G. Niedner-Schatteburg[2] and *A. Kirilyuk*[1] *1. Institute for Molecules and Materials, Radboud University Nijmegen, Nijmegen, Netherlands; 2. Fachbereich Chemie und Forschungszentrum OPTIMAS, TU Kaiserslautern, Kaiserslautern, Germany; 3. BESSY II, Helmholtz-Zentrum Berlin fuer Materialien und Energie, Berlin, Germany; 4. Max-Planck-Institut für Chemische Energiekonversion, Mülheim an der Ruhr, Germany*

**10:30**

**AH-11**. **Magnetic properties of CoTb nanoparticles prepared by mass-selected low energy cluster beam deposition.** A. Robert[1], A. Tamion[1], C. Albin[1], *D. Le Roy*[1] and V. Dupuis[1] *1. Institut Lumière Matière, Villeurbanne, France*

**10:42**

**AH-12**. **Effect of the particle size on the magnetic properties of $Co_2FeAl$ Heusler alloy nanoparticles.** *S. Alikhanzadeh-Arani*[1] *1. University of Kashan, Institute of Nano Science and Nano Technology, Kashan, The Islamic Republic of Iran*

**10:54**

**AH-13**. **Synthesis and Characterization of Magnetochromatic $Fe_3O_4$ Particles by a Facile Ultrasound-assisted Process.** *W. Wang*[1], L. Zhuang[1], R. Hong[1], L. Zheng[1], F. Lu[1] and A. Zheng[1] *1. Sun Yat-sen University, Guangzhou, China*

**11:06**

**AH-14**. **Improving Magnetic Properties Of Iron Oxide Nanoparticles By Eliminating The Magnetic Dead Layer.** *M. Unni*[1], A. Uhl[3], S. Savliwala[1], J. Andrew[3] and C. Rinaldi[1,2] *1. Chemical Engineering, University of Florida, Gainesville, FL; 2. J. Crayton Pruitt Family Department of Biomedical Engineering, University of Florida, Gainesville, FL; 3. Materials Science and Engineering, University of Florida, Gainesville, FL*

**11:18**

**AH-15**. **Enhanced Ferromagnetic Properties in $Fe_5Si_3$ Nanoclusters.** *B. Das*[1], B. Balasubramanian[1], R. Skomski[1], P. Manchanda[1], G. Hadjipanayis[2] and D.J. Sellmyer[1] *1. Nebraska Center for Materials and Nanoscience and Department of Physics and Astronomy, University of Nebraska, Lincoln, NE; 2. Department of Physics and Astronomy, University of Delaware, Newark, DE*

## Session AI
# ANISOTROPY EFFECTS IN THIN FILMS I
Seiji Mitani, Chair
NIMS, Tsukuba, Japan

**8:30**

**AI-01**. **Tailoring Perpendicular Magnetic Coupling by XMCD.** *Y.U. Idzerda*[1], R.J. Snow[1], H. Bhatkar[1], A.T. N'Diaye[2] and E. Arenholz[2] *1. Physics, Montana State University, Bozeman, MT; 2. LBNL, Berkeley, CA*

**8:42**

**AI-02**. **Observation of magnetic domain structure initiated by competition among the magnetoelastic anisotropy and shape anisotropy using XMCD-PEEM.** *A. Yamaguchi*[1], T. Ohkochi[2], A. Yasui[2], T. Kinoshita[2] and K. Yamada[3] *1. Laboratory of Advanced Science and Technology for Industry, University of Hyogo, Ako-gun, Japan; 2. JASRI/SPring-8, Sayo, Japan; 3. Gifu University, Gifu, Japan*

**8:54**

**AI-03**. **Interfacial Exchange Coupling in FeCo/MnGa Studied by X-ray Magnetic Circular Dichroism.** *J. Okabayashi*[1], K.Z. Suzuki[2] and S. Mizukami[2] *1. Research Center for Spectrochemistry, The University of Tokyo, Tokyo, Japan; 2. WPI-AIMR, Tohoku University, Sendai, Japan*

**9:06**

**AI-04**. **Microstructure and Magnetism of Epitaxial Grown $L1_0$-MnGa(001) on $\eta_\perp$-$Mn_3N_2$.** *J.P. Corbett*[1], A.O. Mandru[1], A.L. Richard[1], J. Gallagher[3], F. Yang[2], D.C. Ingram[1] and A.R. Smith[1] *1. Physics and Astronomy, Ohio University, Athens, OH; 2. Physics, The Ohio State University, Columbus, OH; 3. Physics and Astronomy, The Ohio State University, Colubmus, OH*

**9:18**

**AI-05**. **Interfacial magnetic anisotropy in rare-earth metal ultra-thin films.** *K. Nawa*[1], T. Akiyama[1], T. Ito[1], T. Oguchi[2], M. Weinert[3] and K. Nakamura[1] *1. Physics Engineering, Mie University, Tsu, Japan; 2. The Institute of Scientific and Industrial Research, Osaka University, Ibaraki, Japan; 3. Physics, University of Wisconsin-Milwaukee, Milwaukee, WI*

**9:30**

**AI-06**. **Effect of anisotropy on magnetic and Ferromagnetic Resonance Studies on Tb-Fe thin films.** *P. Rajasekhar*[1] and G. Markandeyulu[1] *1. Physics, Indian Institute of Technology, Chennai, India*

**9:42**

**AI-07**. **Interfacial perpendicular magnetization and atomic interdiffusion at $Co_2FeAl/MgAl_2O_4$ spinel interface.** *H. Sukegawa*[1], J.P. Hadorn[1], T. Ohkubo[1], S. Mitani[1] and K. Hono[1] *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan*

**9:54**

**AI-08**. **Enhanced annealing stability and anisotropy in perpendicular magnetic tunnel junctions using W layer.** *J. Chatterjee*[1], N. Perrissin[1], S. Auffret[1], R.C. Sousa[1] and B. Diény[1] *1. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France*

**10:06**

**AI-09**. **Enhancement of $L1_0$ ordering with the *c*-axis perpendicular to the substrate in FePt alloy film by using an epitaxial cap-layer.** *M. Ohtake*[1,3], M. Nakamura[1], M. Futamoto[1], F. Kirino[4] and N. Inaba[2] *1. Faculty of Science and Engineering, Chuo University, Tokyo, Japan; 2. Faculty of Engineering, Yamagata University, Yamagata, Japan; 3. Faculty of Engineering, Kogakuin University, Tokyo, Japan; 4. Graduate School of Fine Arts, Tokyo University of the Arts, Tokyo, Japan*

**10:18**

**AI-10**. **Thickness-induced spin-reorientation originated from competing magnetic shape anisotropies.** *J. Tang*[1], W. He[1], X. Zhang[1] and Z. Cheng[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**10:30**

**AI-11**. **Strain-induced In-plane Spin Reorientation Of BCC-like Iron Films Grown On Cu(001).** *E. Corredor Vega*[1], J.I. Arnaudas[2,3], M. Ciria[4,2], F. Lofink[1], S. Rössler[1], R. Frömter[1] and H.P. Oepen[1] *1. Institut für Nanostruktur- und Festkörperphysik, Universität Hamburg, Hamburg, Germany; 2. Departamento de Física de la Materia Condensada, Universidad de Zaragoza, Zaragoza, Spain; 3. Instituto de Nanociencia de Aragón, Universidad de Zaragoza, Zaragoza, Spain; 4. ICMA-Universidad de Zaragoza, Zaragoza, Spain*

**10:42**

**AI-12**. **Controlling phase transformation and magnetic properties in $Fe_{100-x}Pd_x$ thin films by current annealing.** M. Coisson[1], G. Barrera[1], F. Celegato[1], M. Cialone[2], P. Rizzi[2] and *P. Tiberto*[1] *1. INRIM, Torino, Italy; 2. Chemistry, Università di Torino, Torino, Italy*

**10:54**

**AI-13**. **Magnetisation reversal in ultra-thin FeRh films grown on MgO (001) substrates.** *C.W. Barton*[1], T.A. Ostler[2], C. Kinane[3], G. Hrkac[4] and T. Thomson[1] *1. Nano Engineering and Storage Technologies, School of Computer Science, University of Manchester, Manchester, United Kingdom; 2. Physique des solides, interfaces et nanostructures, University of Liege, Liege, Belgium; 3. Rutherford Appleton Laboratory, Harwell Science and Innovation Campus, Didcot, United Kingdom; 4. Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, United Kingdom*

**11:06**

**AI-14**. **Cobalt thickness independent inverse magnetostriction effect in Pt/Co/Pt structure formed on a flexible substrate.** *S. Ota*[1], R. Asai[2], T. Kozeki[2], H. Akamine[2], T. Fujii[3], T. Namazu[4], T. Takenobu[5], T. Koyama[6] and D. Chiba[7] *1. Applied Physics, The University of Tokyo, Bunkyo-ku, Japan; 2. University of Hyogo, Himeji, Japan; 3. Akita Prefectural University, Akita-shi, Japan; 4. Aichi Institute of Technology, Nagoya-shi, Japan; 5. Nagoya University, Nagoya-shi, Japan; 6. The University of Tokyo, Tokyo, Japan; 7. Department of Applied Physics, The University of Tokyo, Tokyo, Japan*

**11:18**

**AI-15**. **Vanadium-induced modification of magnetic anisotropy in Cr/ultrathin Fe/MgO.** *A. Koziol-Rachwal*[1,2], T. Nozaki[1], V. Zayets[1], H. Kubota[1], A. Fukushima[1], S. Yuasa[1] and Y. Suzuki[1,3] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Kraków, Poland; 3. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan*

TUESDAY MORNING 9:30 — GRAND BALLROOM

## Session AP
## MAGNETIC RECORDING I (Poster Session)

Boris Livshitz, Chair
Western Digital, San Jose, CA

**AP-01**. **FORC-study of magnetization reversal of $L1_0$-FePt based exchange coupled composite films.** G. Situ[1], J. Wang[2] and *B. Ma*[2,1] *1. Fudan University, Shanghai, China; 2. Electrical and computer Engineering, University of Minnesota, Minneapolis, MN*

**AP-02**. **A Reduced BER by Using Layered Decoding of LDPC Codes over HAMR System.** *W. Wongtrairat*[1], T. Sopon[1], S. Wongsuthavas[2], W. Phakphisut[3] and P. Supnithi[3] *1. Faculty of Engineering and Architecture, Rajamangala University of Technology Isan, Nakhonratchasima, Thailand; 2. Faculty of Science and Liberal Arts, Rajamangala University of Technology Isan, Nakhonratchasima, Thailand; 3. Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand*

**AP-03**. **Bit Aspect Ratio Conversion in Two-Track Simultaneous Reading Scheme.** *H. Muraoka*[1] and S. Greaves[1] *1. RIEC, Tohoku University, Sendai, Japan*

**AP-04**. **Suppression of ITI by array head reading and 2D-equalization.** *Y. Nakamura*[1], R. Suzuto[1], H. Osawa[1], Y. Okamoto[1], Y. Kanai[2] and H. Muraoka[3] *1. Department of Electrical and Electronic Engineering and Computer Science, Ehime University, Matsuyama, Japan; 2. IEE, Niigata Institute of Technology, Kashiwazaki, Japan; 3. RIEC, Tohoku Univ, Sendai, Japan*

**AP-05**. **Iterative Intertrack Interference (ITI) Mitigation with 2D Varying Equalizers for Bit Patterned Media Recording.** *Y. Wang*[1] and V. Bhagavatula[1] *1. Electrical and Computer Engineering Department, Carnegie Mellon University, Pittsburgh, PA*

**AP-06**. **High $K_u$ and low intergranular exchange coupling CoPt-based alloy granular media with $B_2O_3$ grain boundary material.** *R. Kushibiki*[1], K. Tham[1], S. Hinata[2] and S. Saito[2] *1. Tanaka Kikinzoku Kogyo K.K, Tsukuba, Japan; 2. Department of Electronic Engineering, Tohoku University, Sendai, Japan*

**AP-07**. **Effective damping factor for CoPt-based alloy film with stacking faults and compositional modulated atomic layered structure.** *S. Hinata*[1] and S. Saito[1] *1. Department of Electronic Engineering, Tohoku University, Sendai, Japan*

**AP-08**. **LDPC Product Coding Scheme with Extrinsic Information for Bit Patterned Media Recording.** *S. Jeong*[1] and J. Lee[1] *1. School of Electronic Engineering, Soongsil University, Seoul, The Republic of Korea*

**AP-09**. **First order reversal curve diagrams of bit patterned MnGa fabricated by local ion irradiation.** *D. Oshima*[1], T. Kato[2] and S. Iwata[3] *1. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan; 2. Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya, Japan; 3. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan*

**AP-10**. **Layer Stacked Co/Pt Films with High Perpendicular Anisotropy Sputter Deposited at Room Temperature.** *N. Honda*[1], S. Hinata[3] and S. Saito[2] *1. Electronics and Intelligent Systems, Tohoku Institute of Technology, Sendai, Japan; 2. Electronic Engineering, Tohoku University, Sendai, Japan; 3. Department of Electronic Engineering, Tohoku University, Sendai, Japan*

## Session AQ
# ENERGY ASSISTED RECORDING I (Poster Session)

Mi-Young Im, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA

**AQ-01**. **Exchange coupled composite FePt/TbCo/[Co/Ni]$_N$ films with an TbCo interlayer.** *B. Ma*[1,2], H. Chu[2], G. Situ[2] and J. Wang[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN; 2. Fudan University, Shanghai, China*

**AQ-02**. **Investigation of Writing Error in Staggered Heated-Dot Magnetic Recording Systems.** *W. Tipcharoen*[1], C. Warisarn[1], D. Tongsomporn[2], D. Karns[3] and P. Kovintavewat[4] *1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand; 2. Seagate Technology (Thailand), Samutprakarn, Thailand; 3. Seagate Technology US NRM Facility, Bloomington, MN; 4. Data Storage Technology Research Center, Nakhon Pathom Rajabhat University, Nakhon Pathom, Thailand*

**AQ-03**. **First versus second order phase transition materials for heat-assisted magnetic recording.** *C. Vogler*[1], C. Abert[2], F. Bruckner[1] and D. Suess[1] *1. Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria; 2. Institute of Solid State Physics, Christian Doppler Laboratory for Advanced Magnetic Sensing and Materials, Vienna University of Technology, Vienna, Austria*

**AQ-04**. **The Effect of a Novel Energetic Carbon Overcoat Deposition on the Magnetic and Structural Properties of FePt Recording Medium.** S. Bhatti[1], O. Bo[2], R.S. Rawat[2] and *S.N. Piramanayagam*[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 2. Natural Sciences and Science Education, National Institute of Education, Singapore, Singapore*

**AQ-05**. **Multiscale Modeling of Organic Molecules Contamination in Head-Disk Interface under High Thermal Stress Coupled With Magnetic Fields.** *W. Song*[1], P. Chung[2], M.S. Jhon[1] and L.T. Biegler[1] *1. Chemical Engineering, Carnegie Mellon Univ, Pittsburgh, PA; 2. Samsung Electro-mechanics, Suwon si, The Republic of Korea*

**AQ-06**. **Non-equilibrium Responses of PFPE Lubricants with Various Atomistic/Molecular Architecture at Elevated Temperature.** *P. Chung*[1], W. Song[2] and M.S. Jhon[2] *1. Samsung Electro-mechanics, Suwon, The Republic of Korea; 2. Chemical Engineering, Carnegie Mellon University, Pittsburgh, PA*

**AQ-07**. **Resonance frequency distribution of ECC grains in microwave assisted magnetic recording.** *S. Greaves*[1], Y. Kanai[2] and H. Muraoka[1] *1. RIEC, Tohoku University, Sendai, Japan; 2. IEE, Niigata Institute of Technology, Kashiwazaki, Japan*

**AQ-08**. **Micromagnetic Model Analysis of Double- and Tri-Layered Spin Torque Oscillators with Write Head for Microwave-Assisted Magnetic Recording.** *Y. Kanai*[1], R. Itagaki[1], S. Greaves[2], K. Yoshida[3] and H. Muraoka[2] *1. IEE, Niigata Institute of Technology, Kashiwazaki, Japan; 2. RIEC, Tohoku University, Sendai, Japan; 3. Kogakuin University, Tokyo, Japan*

**AQ-09**. **Damping Constant Dependence of SNR at Track Edge for Shingled Microwave-Assisted Magnetic Recording.** *T. Tanaka*[1], D. Sakamoto[1], Y. Kanai[2] and K. Matsuyama[3] *1. Faculty of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan; 2. IEE, Niigata Institute of Technology, Kashiwazaki, Japan; 3. Department of Electronics, Kyushu University, Fukuoka, Japan*

**AQ-10**. **Selective Excitation of Ferromagnetic Resonance Using Circularly Polarized Magnetic Fields Generated by Coplanar Cross Waveguides.** *I. Kan*[1] and Y. Nozaki[1] *1. Dept. of Physics, Keio University, Yokohama, Japan*

**AQ-11**. **Switching Probability Under Spin Wave Excitation in an In-plane Magnetized $L1_0$-FePt / $Ni_{81}Fe_{19}$ Exchange-coupled Bilayer.** *W. Zhou*[1], T. Seki[1,2], T. Yamaji[3], H. Imamura[3] and K. Takanashi[1,4] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. JST PRESTO, Saitama, Japan; 3. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan; 4. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

**AQ-12**. **Computational analysis of microwave assisted magnetization reversal in unstable switching process.** *T. Tanaka*[1], Y. Nozaki[2] and K. Matsuyama[3] *1. Faculty of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan; 2. Keio University, Yokohama, Japan; 3. Department of Electronics, Kyushu University, Fukuoka, Japan*

**AQ-13**. **Current-induced spin oscillation in ferromagnetic cross structure.** *J. Wang*[1], X. Zhang[2], X. Lu[3], Y. Yan[1], Y. Zhou[2] and Y. Xu[1] *1. Department of Electronics, University of York, York, United Kingdom; 2. School of Science and Engineering, The Chinese University of Hong Kong, Shenzhen, Hong Kong; 3. Department of Physics, University of York, York, United Kingdom*

**AQ-14**. **Influence of Exchange on Signal-To-Noise Ratio In $[CoX/Pt]_4$ Media.** *Z. Zhao*[1], J. Li[1], L. Wang[1] and D. Wei[1] *1. School of Materials Science and Engineering, Tsinghua University, Beijing, China*

**AQ-15**. **Influence of the second order perpendicular anisotropy on the spin-torque diode effect in MTJ and implications on energy harvesting.** R. Tomasello[1], M. Ricci[1], G. Siracusano[2], P. Burrascano[1], Z. Zeng[3], M. Carpentieri[4] and *G. Finocchio*[2] *1. Department of Engineering, Polo Scientifico Didattico di Terni, University of Perugia, Perugia, Italy; 2. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 3. Suzhou Institute of Nano-tech and Nano-bionics, CAS, Suzhou, China; 4. Ingegneria Elettrica e dell'Informazione, Politecnico of Bari, Bari, Italy*

## Session AR
# HIGH FREQUENCY AND MICROWAVE DEVICES I (Poster Session)

Nian Sun, Co-Chair
Northeastern University, Boston, MA
Xin Fan, Co-Chair
University of Denver, Denver, CO

**AR-01**. **Spin-torque oscillator with a conically magnetized free layer.** *H. Arai*[1,2], R. Matsumoto[2], S. Yuasa[2] and H. Imamura[2] *1. JST-PRESTO, Kawaguchi, Japan; 2. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

**AR-02**. **Scaling Effect of Spin Torque Oscillators for Magnetic Read Sensor.** *X. Chao*[1], M. Jamali[1] and J. Wang[1] *1. Electrical & Computer Eng., University of Minnesota, Minneapolis, MN*

**AR-03**. **Three-terminal spin-torque oscillator devices using MgO-based magnetic tunnel junctions.** *E.R. Evarts*[1], M. Pufall[1] and W. Rippard[1] *1. Spin Electronics Group, National Institute of Standards and Technology, Boulder, CO*

**AR-04**. **Soft Magnetic Property and Magnetization Reversal Mechanism of Oblique Sputtered FeCoDy Thin Film for High-Frequency Application.** Z. Xu[1], Z. Zhang[1], F. Hu[1], E. Liu[1] and *F. Xu*[1] *1. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, China*

**AR-05**. **Impact of Polycrystalline Co Layer of High Frequency Impedance and Surface Magnetism of Amorphous FeNi-based Ribbons.** *T.M. Eggers*[1], D.S. Lam[1,2], O. Thiabhog[1], J. Marcin[3], P. Svec[4], I. Skorvanek[3], H. Srikanth[1] and M. Phan[1] *1. Department of Physics, University of South Florida, Tampa, FL; 2. Faculty of Physics, Hanoi University of Science, Hanoi, Vietnam; 3. Institute of Experimental Physics, Slovak Academy of Sciences, Kosice, Slovakia; 4. Institute of Physics, Slovak Academy of Sciences, Bratislava, Slovakia*

**AR-06**. **Powerful And Tunable THz Emitters Based On The Fe/Pt Magnetic Heterostructure.** D. Yang[1], J. Liang[2], C. Zhou[2], L. Sun[2], R. Zheng[3], S. Luo[1], *Y. Wu*[2] and J. Qi[1] *1. The Peac Institute of Multiscale Sciences, Chengdu, China; 2. Department of Physics, State Key Laboratory of Surface Physics and Collaborative Innovation Center of Advanced Microstructure, Fudan University, Shanghai, China; 3. Department of Physics, Ocean University of China, Qingdao, China*

**AR-07**. **Perpendicularly Magnetized YIG-film Resonators and Waveguides with High Operating Power.** *M. Balinskiy*[1], B. Mongolov[2], D. Gutierrez[1], H. Chiang[1], A.N. Slavin[3] and A. Khitun[1] *1. University of California Riverside, Riverside, CA; 2. National Technical University of Ukraine, Kiev, Ukraine; 3. Physics, Oakland University, Rochester Hills, MI*

**AR-08**. **Wiedemann Effect Enabled Mechanical Mode Coupling to Ferromagnetic Resonance.** *S. Cho*[1], M. Cho[1] and Y. Park[1] *1. Department of Physics & Astronomy, Seoul National University, Seoul, The Republic of Korea*

**AR-09**. **Circularly Polarized Antennas Realization by NiZn Ferrite Full Film Loading Substrates.** W. Bao[1], *H. Lin*[1] and N.X. Sun[2] *1. ECE, Northeastern University, Boston, MA; 2. Northeastern University, Boston, MA*

**AR-10**. **Excitation of Spin Wave by Direct Injection of RF Current in NiFe Film.** *H. Chiang*[1], M. Balinskiy[1], D. Gutierrez[1] and A. Khitun[1] *1. Electrical and Computer Engineering, University of California, Riverside, Riverside, CA*

**AR-11**. **Spin Wave Interference in YIG Cross Junction.** *M. Balinskiy*[1], D. Gutierrez[1], H. Chiang[1], Y. Filimonov[2], A. Kozhevnikov[2] and A. Khitun[1] *1. University of California Riverside, Riverside, CA; 2. Kotel'nikov Institute of Radioengineering and Electronics of Russian Academy of Sciences, Saratov Branch, Saratov, Russian Federation*

**AR-12**. **An Integrated Tunable Nonlinear Wideband Bandstop Filter.** *Y. Gao*[2,1], H. Chen[1], X. Yang[3], Y. He[1], X. Wang[1], Y. Wei[1] and N.X. Sun[1] *1. ECE, Northeastern University, Boston, MA; 2. Winchester Technologies, LLC., Burlington, MA; 3. School of Information and Electronics, Beijing Institute of Technology, Beijing, China*

**AR-13**. **Radiated EMI Simulation for High-Power Ultra-Precision PMSM System Driven by PWM Converter.** Y. Huangfu[1] and *S. Wang*[1] *1. State Key Laboratory of Electrical Insulation and Power Equipment, School of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China*

**AR-14**. **Experiment-based simulations of the magnetization reversal for ns-range clocked nanomagnetic logic.** *G. Ziemys*[1], S. Breitkreutz-v. Gamm[1], G. Csaba[2], D. Schmitt-Landsiedel[1] and M. Becherer[3] *1. Institute for Technical Electronics, Technical University of Munich, Munich, Germany; 2. University of Notre Dame, Notre Dame, IN; 3. Institute for Nanoelectronics, Technical University of Munich, Munich, Germany*

TUESDAY
MORNING
9:30

GRAND BALLROOM

## Session AS
# MAGNETIC SENSORS I
# (Poster Session)

Daniel Gopman, Chair
National Institute of Standards and Technology, Gaithersburg, MD

**AS-01**. **A New Sensor Structure for Rotational Core Loss Measurement of Nanocrystalline alloy.** *L. Chen*[1], Y. Wang[1] and H. Zhao[1] *1. Hebei University of Technology, Tianjin, China*

**AS-02**. **Large Magnetoresistance Effect In Nitrogen-doped Silicon.** *W. Tao*[1], Z. Yang[1], W. Wang[5], M. Si[3], H. Liu[4], D. Yang[2] and X.D. Sheng[3] *1. Lanzhou Univercity, Lanzhou, China; 2. Lanzhou University, Lanzhou, China; 3. Key Laboratory for Magnetism and Magnetic Materials of the Ministry of Education, Lanzhou University, Lanzhou, China; 4. Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou, China, Lanzhou, China; 5. Lanzhou University, Lanzhou, China*

**AS-03**. **Temperature and frequency-dependent dynamic magnetoresistance in silicon *p–n* junction devices.** *W. Tao*[1], Y. Cao[1], D. Yang[1], Q. Liu[2] and X.D. Sheng[1] *1. Lanzhou University, Lanzhou, China; 2. Key Laboratory for Magnetism and Magnetic Materials of the Ministry of Education, Lanzhou, China*

**AS-04**. **Magneto-transport properties in [Amorphous CoSiB/Pt] multilayer films.** *H. Lee*[1] and T. Kim[1] *1. Sejong University, Seoul, The Republic of Korea*

**AS-05**. **Effect of bias voltage on sensitivity-bandwidth product of single and series connected tunneling magnetoresistance sensors.** *M. Dabek*[1,2], P. Wisniowski[1], T. Stobiecki[1], J. Wrona[3], S. Cardoso[4] and P.P. Freitas[5] *1. Electronics, AGH University of Science and Technology, Krakow, Poland; 2. Silicon Creations, Krakow, Poland; 3. Singulus Technologies AG, Kahl am Main, Germany; 4. INESC-MN and IN – Institute of Nanoscience and Nanotechnology, Lisbon, Portugal; 5. INL-International Iberian Nanotechnology Laboratory, Braga, Portugal*

**AS-06**. **Magnetic-domain control of Fe-based amorphous ribbons for highly sensitive fluxgate sensors.** *H. Miyata*[1,2], R. Yamamoto[2], Y. Morimoto[2] and M. Takezawa[2] *1. MTI Co., Ltd., Kitakyushu, Japan; 2. Faculty of Engineering, Kyusyu Institute of Technology, Kitakyushu, Japan*

**AS-07**. **Development of a planar-type high sensitivity metallic contaminant detector.** *S. Okabe*[1] and I. Sasada[1] *1. Applied Science for Electronics and Materials, Kyushu University, Kasha, Japan*

**AS-08**. **New Method to Improve Linearity and Measurement Range of Tunneling Magnetoresistance Sensors.** *X. Wang*[1], J. Ouyang[2], L. Chen[1] and X. Yang[1] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 2. Huazhong University of Science and Technology, Wuhan, China*

**AS-09**. **Tunneling magnetoresistance sensors with or without a soft magnetic coupled free layer.** *Y. Liu*[1], X. Yin[2], Y. Yang[1], D. Ewing[3], P. De Rego[4] and S. Liou[5] *1. Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE; 2. National Institute of Standards and Technology, Boulder, CO; 3. Department of Energy's National Security Campus, Kansas City, KS; 4. Department of Energy's National Security Campus, Albuquerque, NM; 5. University of Nebraska - Lincoln, Lincoln, NE*

**AS-10**. **A high-sensitivity zero-biased magnetoelectric sensor using five-phase laminate composites based on FeCoV nanocrystalline soft magnetic alloy.** *J. Qiu*[1], Y. Wen[1], P. Li[1] and X. Xu[1] *1. College of Optoelectronic Engineering, Chongqing University, Chongqing, China*

**AS-11**. **Temperature induced ringing in low-field magnetic sensors.** *N. Prabhu Gaunkar*[1], C.I. Nlebedim[1], I. Bulu[2], M. Mina[1], Y. Song[2] and D.C. Jiles[1] *1. Iowa State University, Ames, IA; 2. NMR Fluids Research Division, Schlumberger-Doll Research, Cambridge, MA*

**AS-12**. **A Miniaturized Magnetoelectric Device Based on Single-Phase Hexaferritein Sensor/Tuning Applications.** *S. Zare*[1] and C. Vittoria[2] *1. Northeastern University, Boston, MA; 2. ECE, Northeastern University, Boston, MA*

**AS-13**. **Detectivity of Highly Sensitive MTJ arrays for bio-magnetic field sensor.** *S. Cakir*[1], D. Kato[1], K. Fujiwara[1], J. Jono[2], M. Oogane[1] and Y. Ando[1] *1. Applied Physics, Tohoku University, Sendai, Japan; 2. Konica Minolta Inc., Tokyo, Japan*

**AS-14**. **Investigation of a Dual-Stator Magnetic Gravity Compensator for Vibration Isolation System.** B. Kou[1], *Y. Zhou*[1], F. Xing[1], X. Yang[1] and H. Zhang[2] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China; 2. Electrical Engineering, Harbin Institute of Technology, Harbin, China*

**AS-15**. **A Single-Phase Axially-Magnetized Permanent-Magnet Oscillating Alternator for Miniature Aerospace Power Source.** *Y. Sui*[1] and P. Zheng[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

## Session AT
# MAGNETO-ELASTIC AND MAGNETO-OPTIC MATERIALS
## (Poster Session)

Nicholas Jones, Co-Chair
Naval Surface Warfare Center, Carderock Division, Bethesda, MD
Bethanie Stadler, Co-Chair
University of Minnesota, Minneapolis, MN

**AT-01**. **Magneto-optical spectra of Ni-Mn-In-Si based Heusler alloys thin films in martensitic and austenitic states.** *A. Sokolov*[1], A. Novikov[2], E. Ganshina[2], A. Quetz[3], S. Pandey[3], A. Aryal[3], I. Dubenko[3], S. Stadler[4], N. Ali[3], I. Titov[2], I. Rodionov[2], A.P. Zhukov[5], A. Granovsky[2], E. Lahderanta[6], E. Kirianov[7], N. Al-Aqtash[8] and R. Sabirianov[9] *1. University of Nebraska-Lincoln, Lincoln, NE; 2. Department of Physics, Moscow State University, Moscow, Russian Federation; 3. Physics, Southern Illinois University Carbondale, Carbondale, IL; 4. Department of Physics and Astronomy, , Louisiana State University, Baton Rouge, LA; 5. Phys. Mater., UPV/EHU, San Sebastián, Spain; 6. Lappeenranta University of Technology, Lappeenranta, Finland; 7. Lincoln Southwest High School, Lincoln, NE; 8. Hasemite University, Zarqa, Jordan; 9. University of Nebraska - Omaha, Omaha, NE*

**AT-02**. **A Nonlinear Electromagnetic-Mechanical-Thermal Multi-field Coupled Model For Galfenol Rods.** *Y. Li*[1], B. Wang[1], W. Huang[1], R. Zhao[1,2] and X. Cui[1] *1. Key Laboratory of Electro-Magnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China; 2. School of Mechanical and Electrical Engineering, Nanchang Institute of Technology, Nanchang, China*

**AT-03**. **Thickness dependence of solid-state single crystal conversion in magnetostrictive Fe-Ga alloy from thin foil to thick sheet.** *S. Na*[1] and A.B. Flatau[1] *1. Aerospace Engineering, University of Maryland, College Park, MD*

**AT-04**. **Compressive pre-stress effects on magnetostrictive behaviors of highly textured Galfenol and Alfenol thin sheets.** *J. Downing*[1], S. Na[2] and A.B. Flatau[1,2] *1. Materials Science and Engineering, University of Maryland, College Park, MD; 2. Aerospace Engineering, University of Maryland, College Park, MD*

**AT-05**. **Magnetostrictive Energy Harvester with Adjustable-air gap for Low Frequency Human Walking.** *B. Yan*[1] *1. Zhejiang University, Zhejiang Province, China*

**AT-06**. **Large Room-Temperature Magnetostrain in Magnetic Field-Aligned $Mn_{0.965}$CoGe Compound.** *Q. Hu*[1,2], Y. Hu[1], Y. Fang[3], D. Wang[1], Q. Cao[1] and Y. Du[1] *1. Physics, Nanjing University, Nanjing, China; 2. Department of Mathematics and Science, Luoyang Institute of Science and Teleology, Luoyang, China; 3. Changshu Institute of Technology, Soochow, China*

**AT-07**. **Enhancement of directional sensitivity of magnetostrictive phased array sensor using a circular comb-shaped nickel patch.** *B. Yoo*[1] and D.J. Pines[1] *1. Aerospace Engineering, University of Maryland, College Park, MD*

**AT-08**. **Structural Design and Output Characteristic Analysis of Magnetostrictive Actuator.** B. Wang[1], *X. Cui*[1], Y. Li[1], Z. Zou[1] and W. Huang[1] *1. Key Laboratory of Electro-magnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China*

**AT-09**. **Large electric field tunability of microwave ferromagnetic properties of $Fe_{50.8}Co_{24.0}B_{25.2}$/PZN-PT multiferroic heterostructure.** *S. Li*[1,2], R. Yang[1], N.X. Sun[3] and H. Lin[3] *1. Qingdao University, Qingdao, China; 2. National Laboratory of Solid State Microstructures, Nanjing Unversity, Nanjing, China; 3. Northeastern University, Boston, MA*

**AT-10**. **Field-Anneal-Induced Magnetic Anisotropy in Highly Textured Fe-Al Magnetostrictive Strips.** *J. Park*[1], S. Na[1] and A.B. Flatau[1] *1. Aerospace Engineering, University of Maryland, College Park, MD*

**AT-11**. **Effect of magnetic fields on the green color formation in frog skin.** *H. Kashiwagi*[1], A. Kashiwagi[2] and M. Iwasaka[3] *1. AdSM, Hiroshima University, Higashi-Hiroshima, Japan; 2. Graduate School of Science, Institute for Amphibian Biology, Hiroshima University, Higashi-Hiroshima, Japan; 3. Research Institute for Nanodevice and Bio Systems, Hiroshima University, Higashi-Hiroshima, Japan*

**AT-12**. **Magneto-Optical Spectroscopy Of $Ce_{0.95-x}Hf_xCo_{0.05}O_{2-d}$ Thin Films.** M. Zahradnik[1], L. Beran[1], R. Antoš[1], M. Kucera[1], *M. Veis*[1], M. Li[2], J. Qin[2], Y. Zhang[2] and L. Bi[2] *1. Charles University, Prague, Czech Republic; 2. National Engineering Research Center of Electromagnetic Radiation Control Materials, University of Electronic Science and Technology of China, Chengdu, China*

**AT-13**. **Magneto-optical Properties of BiLuIG Single Crystal Film with in-plane easy magnetization axis.** *Q. Yang*[1] *1. University of Electronic Science and Technology of China, Chengdu, China*

**AT-14**. **Magneto-optical Properties Of Ultrathin Ce:YIG Films On (100), (110) And (111) GGG Substrates.** *L. Beran*[1], M. Onbasli[2], M. Zahradnik[1], L. Ohnoutek[1], R. Antoš[1], M. Kucera[1], C.A. Ross[2] and M. Veis[1] *1. Charles University, Prague, Czech Republic; 2. MIT, Cambridge, MA*

**AT-15**. **Optical And Magneto-Optical Properties Of $Gd_{18.3}Fe_{81.7}$ And $Gd_{24.7}Fe_{75.3}$ Thin Films In The Photon Energy Range From 1.5 To 5.5 eV.** *E. Jesenska*[1,2], J. Dušek[1], L. Beran[1], R. Antoš[1], M. Pavelka[1], T. Ishibashi[2], K. Kuga[3], K. Aoshima[3], K. Machida[3], H. Kinjo[3] and M. Veis[1] *1. Institute of Physics, Charles University in Prague, Prague, Czech Republic; 2. Department of Materials Science & Technology, Nagaoka University of Technology, Niigata, Japan; 3. Science and Technology Research Laboratories, NHK Japan Broadcasting Corporation, Tokyo, Japan*

## Session AU
# ELECTRONIC STRUCTURE
# (Poster Session)

Oscar Cespedes, Chair
University of Leeds, Leeds, United Kingdom

**AU-01**. **Tailoring of detrimental effect of surface states on spin polarization of $Co_2MnSi$.** J. Herran[1], I. Tutic[2], P. Grey[3], E. Kiryanov[4], P. Lukashev[2] and *A. Sokolov*[5] *1. Chemistry, University of Northern Iowa, Cedar Falls, IA; 2. Physics, University of Northern Iowa, Cedar Falls, IA; 3. Computer Science, University of Northern Iowa, Cedar Falls, IA; 4. Lincoln South West High School, Lincoln, NE; 5. Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE*

**AU-02**. **A Warping Effect of Dirac Cone by the Perturbation up to 5th Order under the Symmetry of $C_{3v}$.** *K. Kondo*[1] and H. Teramoto[2] *1. Laboratory of Nanostructure Physics, Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan; 2. Molecule & Life Nonlinear Sciences Laboratory, Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan*

**AU-03**. **Half-Metallic Magnetism in $Ti_3Co_{5-x}Fe_xB_2$.** *R. Pathak*[1], I. Ahamed[1], W. Zhang[2], S. Valloppilly[2], D.J. Sellmyer[2], R. Skomski[2] and A. Kashyap[1] *1. School of Basic Sciences, Indian Institute of Technology Mandi Himachal Pradesh, MANDI, India; 2. Physics and Astronomy, University of Nebraska - Lincoln, Lincoln, NE*

**AU-04**. **Effects of Rattling Vibrations in the ESR of $Er^{3+}$ Doped Kondo Insulator $SmB_6$.** G.G. Lesseux[1], P.F. Rosa[2], P. Pagliuso[1], R.R. Urbano[1], Z. Fisk[3], P. Schlottmann[4] and *C. Rettori*[1,5] *1. IFGW - University of Campinas, Campinas, Brazil; 2. Los Alamos National Laboratory, Los Alamos, NM; 3. Department of Physics and Astronomy, University of California Irvine, Irvine, CA; 4. Department of Physics, Florida State University, Tallahassee, FL; 5. CCNH - Universidade Federal do ABC, Santo André, Brazil*

**AU-05**. **Strain effects on spin state of $L1_0$ FePt as measured by x-ray emission spectroscopy.** *P. Quarterman*[1], J. Deng[2], C. Sun[3], J. Chen[2] and J. Wang[4] *1. Electrical Engineering, University of Minnesota, Minneapolis, MN; 2. Materials Science and Engineering, National University of Singapore, Singapore, Singapore; 3. Advanced Photon Source, Argonne National Laboratory, Argonne, IL; 4. Electrical and Computer Engineering, School of Physics & Astronomy, Minneapolis, MN*

**AU-06**. **Pressure-induced structural, magnetic and transport transitions in $Sr_2FeO_3$ from the first-principles.** T. Jia[1], *Z. Zeng*[1,2] and H. Lin[3] *1. Key Laboratory of Materials Physics, Institute of Solid State Physics, Chinese Academy of Sciences, Hefei, China; 2. University of Science and Technology of China, Hefei, China; 3. Beijing Computational Science Research Center, Beijing, China*

**AU-07**. **Relating Symmetry to Magnetic Anisotropy in a Trigonal $Mn^{III}$ Complex Using EPR.** *J.J. Marbey*[1], P. Gan[2], E. Yang[2] and S. Hill[1] *1. Florida State University and NHMFL, Tallahassee, FL; 2. Chemistry Department, Fu Jen Catholic University, Taipei, Taiwan*

**AU-08**. **Electron Paramagnetic Resonance Studies of the Interconversion between Organic Radicals and Dimers.** *S.M. Greer*[1,2], A. Dragulescu-Andrasi[1], J. McKay[2], R. Oakley[3], M. Shatruk[1] and S. Hill[4] *1. Chemistry, Florida State University, Tallahassee, FL; 2. National High Magnetic Field Laboratory, Tallahassee, FL; 3. University of Waterloo, Waterloo, ON, Canada; 4. Florida State University and NHMFL, Tallahassee, FL*

**AU-09**. **Electronic Structure and Magnetism of the Heusler Alloys $Co_2VIn$ and CoVIn.** *Z.W. Muthui*[1,2], R. Pathak[2], J.M. Mwabora[1], R.J. Musembi[1], R. Skomski[3] and A. Kashyap[2] *1. Physics, University of Nairobi, Nairobi, Kenya; 2. School of Basic Sciences, Indian Institute of Technology, Mandi, Mandi, India; 3. Physics and Astronomy, University of Nebraska - Lincoln, Lincoln, NE*

**AU-10**. **Thickness-dependent magnetism of a $CrPt_3$(001) thin film.** *T. Jeong*[1], S. Jekal[1], S. Rhim[1] and S. Hong[1] *1. Physics, University of Ulsan, Ulsan, The Republic of Korea*

**AU-11**. **The Role of Crystal Field Effects on the Topological States in Rare Earth Doped Half-Heuslers.** J.C. Souza[1], G.G. Lesseux[2], C.R. Jesus[3], R.R. Urbano[1], C. Rettori[1] and *P. Pagliuso*[1] *1. DEQ, Instituto de Física Gleb Wataghin - Unicamp, Campinas, Brazil; 2. IFGW-Unicamp, Campinas, Brazil; 3. Eletrônica Quântica, Universidade Estadual de Campinas, Campinas, Brazil*

**AU-12**. **Spin-polarization Trade-off of the $Co_2FeAl$ Heusler Compound Probed by X-ray Magnetic Spectroscopy.** *J. Liang*[1], S. Chang[1], Y. Lin[1] and Y. Tseng[1] *1. Materials Science & Engineering, National Chiao-Tung University, Hsin-Chu, Taiwan*

**AU-13**. **First-principles insights into magnetic insulators proximity induced effect in graphene.** *A. Hallal*[1], F. Ibrahim[1], H. Yang[1], S. Roche[3] and M. Chshiev[1] *1. UMR 8191 CEA/CNRS/UJF, SPINTEC, Grenoble, France; 3. Catalan Institute of Nanoscience and Nanotechnology (ICN2), Barcelona, Spain*

**AU-14**. **Electronic structure and magnetic anisotropy driven magnetostructural transformations in 4f correlated rare-earth dialuminides.** *D. Paudyal*[1], T. Hackett[1], A. Pathak[1] and V.K. Pecharsky[1,2] *1. Ames Laboratory, Ames, IA; 2. Department of Materials Science and Engineering, Iowa State University, Ames, IA*

**AU-15**. **First principles investigation of the Co(0001)/$MoS_2$ and Ni(111)/$WSe_2$ interfaces for spin injection in a transition metal dichalcogenide monolayer.** T. Garandel[1,2], R. Arras[1], X. Marie[2], P. Renucci[2] and *L. Calmels*[1] *1. CEMES-CNRS, Toulouse Cedex 4, France; 2. INSA, LPCNO, Toulouse, France*

## Session AV
# VOLTAGE CONTROLLED MAGNETISM I (Poster Session)

Jia Zhang, Co-Chair
University of Nebraska, Lincoln, NE
Shinji Miwa, Co-Chair
Osaka University, Osaka, Japan

**AV-01**. **Anisotropic magnetoelectric coupling effect in magnetization-graded multiferroic composites.** *L. Chen*[1,2] and Y. Wang[3] *1. Key Lab of Computer Vision and Intelligent Information System, Chongqing University of Arts and Sciences, Chongqing, China; 2. College of Optoelectronic Engineering, chongqing university, Chongqing, China; 3. Electrical and Computer Engineering Department, Carnegie Mellon University, Pittsburgh, PA*

**AV-02**. **Strain-induced 180° magnetization switching in Fe/$BaTiO_3$(110) heterostructured multiferroics.** G. Venkataiah[1], M. Itoh[2] and *T. Taniyama*[2] *1. School of Physics, University of Hyderabad, Hyderabad, India; 2. Laboratory for Materials and Structures, Tokyo Institute of Technology, Yokohama, Japan*

**AV-03**. **Surface-effect Enhanced Magneto-electric Coupling In FePt/PMN-PT Multiferroic Heterostructures.** *Y. Yang*[1,2], J. Li[1,2], X. Peng[1,2], X. Wang[1,2], B. Hong[1,2] and H. Ge[1,2] *1. College of Materials Science and Engineering, China Jiliang University, Hangzhou 310018, China; 2. Zhejiang Province Key Laboratory of Magnetism, China Jiliang University, Hangzhou 310018, China*

**AV-04**. **Electric-field control of magnetization in the flexible P(VDF–TrFE)/CoFeB multiferroic heterostructure.** *Z. Tang*[1], J. Gao[1], L. Wang[1], H. Ni[1] and Y. Qi[1] *1. Department of Physics, The University of Hong Kong, Hong Kong, Hong Kong*

**AV-05**. **Giant non-volatile modulation of magnetic moments at the interface of $La_{0.7}Sr_{0.3}MnO_3/PbZr_{0.2}Ti_{0.8}O_3$ at room temperature.** Q. Liu[1], J. Miao[1], K. Meng[1], Y. Wu[1], X. Xu[1] and *Y. Jiang*[1] *1. University of Science and Technology Beijing, Beijing, China*

**AV-06**. **Interchanged core/shell assembly of diluted magnetic semiconductor $CeO_2$ and ferromagnetic ferrite $Fe_3O_4$ for electromagnetic wave absorption.** *J. Wang*[1,2], P. Zhu[1], J. Wang[1] and S. Or[2] *1. Department of Mechanical Engineering, Hefei University of Technology, Hefei, China; 2. Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong*

**AV-07**. **Ionic-liquid Gating of Perpendicularly Magnetized CoFeB/MgO Thin Films.** *Y. Liu*[1], G. Agnus[1], S. Ono[2], L. Ranno[2], A. Bernand-Mantel[3], R. Soucaille[1], J. Adam[1], J. Langer[4], B. Ocker[4], D. Ravelosona[1] and L.H. Diez[1] *1. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Orsay, France; 2. Institut Néel, CNRS and Université Joseph Fourier, Grenoble, France; 3. Institut Néel, CNRS, Grenoble, France; 4. Singulus AG, Kahl, Germany*

**AV-08**. **A non-volatile memory based on nonlinear magnetoelectric effects.** J. Shen[1], J. Cong[1], Y. Chai[1], *D. Shang*[1], S. Shen[1], K. Zhai[1], Y. Tian[1] and Y. Sun[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**AV-09**. **Effect of Residual Strain on the Electronic Transport and Magnetoresistance Properties of Multiferroic in thin film of $La_{0.9}Ca_{0.1}MnO_3/0.7Pb(Mg_{1/3}Nb_{2/3})O_3$-$0.3PbTiO_3$.** *Y. Qi*[1], J. Gao[1] and L. Wang[2] *1. Physics, The University of Hong Kong, Hong Kong, Hong Kong; 2. School of Materials Science and Engineering, Shanghai University, Shanghai, China*

**AV-10**. **Coexistence of large tunneling electroresistance and tunneling magnetoresistance in multiferroic tunnel junctions.** L. Jiang[1], L. Tao[2], B. Yang[1], J. Wang[2] and *X. Han*[1] *1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Department of Physics and the Center of Theoretical and Computational Physics, The University of Hong Kong, Hong Kong, China*

**AV-11**. **Co-existence of Tetragonal and Pseudo-cubic Phases in $BiFeO_3$ Film Deposited on TiN Under Layer.** *Y. Wang*[1], J. Wang[2], T. Harumoto[1], Y. Nakamura[1], K. Nakada[3], S. Nakagawa[4] and J. Shi[1] *1. School of Materials and Chemical Engineering, Tokyo Institute of Technology, Tokyo, Japan; 2. Magnetic Materials Unit, Magnetic Materials Gr., National Institute for Materials Science (NIMS), Tsukuba, Japan; 3. Technical Center, TDK Corporation, Tokyo, Japan; 4. Engineering School, Tokyo Institute of Technology, Tokyo, Japan*

## Session AW
# FUNDAMENTAL PROPERTIES: SPIN GLASSES AND FRUSTRATION I (Poster Session)

Naëmi Leo, Chair
Paul Scherrer Institute, Villigen PSI, Switzerland

**AW-01**. **Low temperature magnetic properties of $Fe_2MnAl$ thin films.** *V. Novosad*[1], P.N. Lapa[1], J.E. Pearson[1], A. Bogach[2], M. Gorshenkov[3] and V. Khovaylo[3] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Prokhorov General Physics Institute, Moscow, Russian Federation; 3. National University of Science and Technology "MISIS", Moscow, Russian Federation*

**AW-02**. **Withdrawn**

**AW-03**. **Evidence For Reentrant Spin Glass Behavior in $Co_{55.5}M_3Ga_{41.5}$ (M = Cr, Fe, Co).** *S. Yasin*[1], M. Vagadia[2], S. Kasiviswanathan[1], V. Srinivas[1] and A.K. Nigam[2] *1. Department of Physics, Indian Institute of Technology Madras, Chennai, India; 2. Department of Condensed Matter Physics and Materials Science, Tata Institute of Fundamental Research, Mumbai, India*

**AW-04**. **Magnetic Dynamics of Interacting $Cu_{0.25}Co_{0.25}Zn_{0.5}Fe_2O_4$ Nanoparticles.** *H. Bhargava*[1], L. Nambakkat[2] and K. Venugopalan[2] *1. Dept. of Physics, T John Institute of Technology, Bangalore, India; 2. Department of Physics, Mohan Lal Sukhadia University, Udaipur, India*

**AW-05**. **Low-energy singlet sector in spin-1/2 $J_1$-$J_2$ Heisenberg model on square lattice.** *A. Aktersky*[1] *1. Petersburg Nuclear Physics Institute, St Petersburg, Russian Federation*

**AW-06**. **Magnetic susceptibility and specific heat of $Cs_2CuCl_{4-x}Br_x$ ($x$ = 0-4) single crystals.** *H. Xu*[1], J. Song[1], J. Wu[1], X. Liu[1], J. Zhao[1], X. Zhao[2] and X. Sun[1] *1. Hefei National Laboratory for Physical Sciences at Microscale, University of Science and Technology of China, Hefei, China; 2. School of Physical Sciences, University of Science and Technology of China, Hefei, China*

**AW-07**. **Local Structure And *d*-electron Occupancy In The Disordered *S* = 3/2 Spin System $BaTi_{1/2}Mn_{1/2}O_3$.** *R.L. Serrano*[1], F.A. Garcia[2], R.P. Amaral[1], E. Granado[3], U.F. Kaneko[3], J.G. Duque[3], P. Pagliuso[4] and J. Sichelschmidt[5] *1. Institute of Physics, Federal University of Uberlândia, Uberlândia, Brazil; 2. IFUSP, Univ. de São Paulo, 05508-090, São Paulo, Brazil; 3. Inst Fis Gleb Wataghin, Univ. Estadual de Campinas, 13083-970, Campinas, Brazil; 4. DEQ, Instituto de Física Gleb Wataghin - Unicamp, Campinas, Brazil; 5. Max Planck Institute for Chemical Physics of Solids, D-01187, Dresden, Germany*

**AW-08**. **Synthesis and magnetic characterization of DMF-protected Gold nanoclusters.** M. Inada[1], *T. Koshida*[1], Y. Yoshihara[1], A. Matsuo[2], Y. Yamamoto[3] and T. Saitoh[1] *1. Pure and Applied Physics, Kansai University, Osaka, Japan; 2. ISSP, Univ. of Tokyo, Kashiwa, Japan; 3. Engineering Science, Akita University, Akita, Japan*

**AW-09**. **Structural and Antiferromagnetic Properties of Sm-doped Chrysene.** X. Wang[1,2], G. Zhong[1,3], J. Han[1,4], X. Chen[5] and *H. Lin*[1] *1. Beijing Computational Science Research Center, Beijing, China; 2. Department of Physics, University of Science and Technology of China, Hefei, China; 3. Shenzhen Insititutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China; 4. Peking University, Beijing, China; 5. Center for High Pressure Science and Technology Advanced Research, Shanghai, China*

**AW-10**. **Quantum effects in nanomagnets by means phase-space Weyl symbols.** *R. Vaia*[1,2] *1. Institute for Complex Systems, National Research Council, Sesto Fiorentino (FI), Italy; 2. Sezione di Firenze, Istituto Nazionale di Fisica Nucleare, Sesto Fiorentino (FI), Italy*

**AW-11**. **Structural and magnetic properties of spin-1/2 layered ferrimagnet $Bi_2Cu_5B_4O_{14}$.** *U. Arjun*[1], R. Nath[1] and V. Ramakrishnan[1] *1. Physics, Indian Institute of Science Education and Research, Trivandrum, India*

**AW-12**. **Magnetic-glassy behavior associated with discontinuous Morin type spin reorientation transition in $SmCrO_3$.** *M. Tripathi*[1], R.J. Choudhary[1] and D.M. Phase[1] *1. Magnetization Lab, UGC DAE Consortium for Scientific Research, Indore, India*

TUESDAY
AFTERNOON
1:30

MARDI GRAS A-E

## Session BA
# SYMPOSIUM: TOPOLOGICAL INSULATOR/ FERROMAGNET HETEROSTRUCTURES FOR SPINTRONICS

Shufeng Zhang, Chair
University of Arizona, Tucson, AZ

**1:30**

**BA-01**. **Enhanced spin Seebeck effect in topological insulator/ magnetic insulator heterostructures.** ***(Invited)*** *J. Shi*[1], Z. Jiang[1], C. Chang[2], M. Ramezani Masir[3], C. Tang[1], Y. Xu[1], J. Moodera[2] and A.H. MacDonald[3] *1. Department of Physics and Astronomy, University of California Riverside, Riverside, CA; 2. Francis Bitter Magnet Lab, MIT, Cambridge, MA; 3. Department of Physics, University of Texas at Austin, Austin, TX*

**2:06**

**BA-02**. **Room temperature spin pumping and giant spin Hall effect in topological insulator and ferromagnet heterostrutures.** ***(Invited)*** *J. Wang*[1], M. Jamali[1], J. Lee[2], J. Jeong[4], F. Mahfouzi[3], B. Nikolic[3], N. Samarth[2], K.A. Mkhoyan[4], D. Mahendra[5], Y. Lv[1] and Z. Zhao[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN; 2. Physics, Penn State University, University Park, PA; 3. Physics, University of Delaware, Newark, DE; 4. Materials Science, University of Minnesota, Minneapolis, MN; 5. Department of Physics, University of Minnesota, Minneapolis, MN*

**2:42**

**BA-03**. **Spin to charge conversion at room temperature with recently discovered topological insulators.** ***(Invited)*** *L. Vila*[1], J. Attane[1], J. Rojas-Sanchez[4], Y. Fu[1], P. Noël[1], G. Zahnd[1], V. Pham[1], P. Laczkowski[3], J. George[3], N. Reyren[3], H. Jaffres[3], E. Lesne[3], M. Bibes[3], M. Jamet[1], C. Vergnaud[1], A. Marty[1], A. Taleb-Ibrahimi[2], Y. Ohtsubo[2], S. Oyarzun[1] and A. Fert[3] *1. SPINTEC, SOLEIL, Institut Nanosciences et Cryogenie, Univ. Grenoble Alpes, Grenoble, France; 2. Synchrotron Soleil, Palaiseau, France; 3. Unité mixte de Physique CNRS Thales, CNRS, Palaiseau, France; 4. Institut Jean Lamour, Univ. Lorraine, CNRS, Vandoeuvre les Nancy, France*

**3:18**

**BA-04**. **Topological Insulator/Ferromagnet Heterostructures for Spintronics.** ***(Invited)*** *K.L. Wang*[1,2], G. Yu[1], Y. Fan[1], Q. He[1] and P. Upadhyaya[1,3] *1. Electrical Engineering, University of California, Los Angeles, Los Angeles, CA; 2. Materials Science and Engineering, University of California, Los Angeles, Los Angeles, CA; 3. Physics and Astronomy, University of California, Los Angeles, Los Angeles, CA*

**3:54**

**BA-05**. **Photo-Spin-Voltaic Effect.** ***(Invited)*** *M. Wu*[1], D. Ellsworth[1], L. Lu[1], J. Lan[2,3], H. Chang[1], P. Li[1], Z. Wang[3], D. Qu[4], A.A. Jara[2], J. Hu[2], B. Johnson[1], Y. Bian[1], J. Xiao[3], I. Krivorotov[2], C.L. Chien[4] and R. Wu[2,3] *1. Department of Physics, Colorado State University, Fort Collins, CO; 2. Physics and Astronomy, University of California, Irvine, Irvine, CA; 3. Physics Department, Fudan University, Shanghai, China; 4. Physics and Astronomy, Johns Hopkins University, Baltimore, MD*

## Session BB
# SPIN HALL EFFECT I
Olivier Boulle, Chair
Spintec, Grenoble cedex 9, France

**1:30**

**BB-01**. **Spin Hall Effect In Epitaxial Cu(111) Films With δ-doped Bi Measured By H-Pattern.** ***(Invited)*** C. Chen[1] and *X. Jin*[1] *1. Fudan University, Shanghai, China*

**2:06**

**BB-02**. **Tuning the Spin Hall Effect of Pt from the Moderately Dirty to the Superclean Regime.** *E. Sagasta*[1], Y. Omori[2], M. Isasa[1], M. Gradhand[3], L.E. Hueso[1,4], Y. Niimi[2,5], Y. Otani[2,6] and F. Casanova[1,4] *1. CIC nanoGUNE, Donostia-San Sebastian, Spain; 2. ISSP, University of Tokyo, Kashiwa, Japan; 3. University of Bristol, Bristol, United Kingdom; 4. IKERBASQUE, Bilbao, Spain; 5. Department of Physics, Osaka University, Toyonaka, Japan; 6. RIKEN-CEMS, Wako, Japan*

**2:18**

**BB-03**. **Significantly Enhanced Spin Hall Angle of Pd by B Doping.** *P. Chen*[1], Y. Du[1], C. Lai[1] and M. Pakala[2] *1. National Tsing Hua University, HsinChu, Taiwan; 2. Applied Materials, Inc., Santa Clara, CA*

**2:30**

**BB-04**. **Structure Dependent Spin Hall Angle In Permalloy/Tantalum Bilayers.** *M. Tang*[1], R. Ramaswamy[2], Z. Shi[1], H. Yang[2], X. Qiu[1] and S. Zhou[1] *1. School of Physics Science and Engineering, Tongji University, Shanghai, China; 2. National University of Singapore, Singapore, Singapore*

**2:42**

**BB-05**. **Spin Hall Effects from Mesoscopic NiFe Films in Lateral Structures.** *C. Qin*[1], S. Chen[1], Y. Cai[1] and Y. Ji[1] *1. Department of Physics and Astronomy, Unversity of Delaware, Newark, DE*

**2:54**

**BB-06**. **Is MOKE a viable method for probing spin Hall effect in metals?** Y. Su[1], *H. Wang*[1], C. Tian[1], X. Jin[1] and Y. Shen[1,2] *1. Fudan University, Shanghai, China; 2. University of California, Berkeley, Berkeley, CA*

**3:06**

**BB-07**. **Ferromagnetic/nonmagnetic nanostructures for the electrical measurement of the Spin Hall effect.** *V. Pham*[1], L. Vila[1], G. Zahnd[1], A. Marty[1], P. Noël[1], W. Savero-Torres[1] and J. Attane[1] *1. SPINTEC, INAC, CEA-Grenoble, Grenoble, France*

3:18

**BB-08**. **Spin-Hall nano-oscillator with oblique magnetization and Dzyaloshinskii-Moriya interaction as generator of skyrmions and nonreciprocal spin-waves.** *A. Giordano*[1], R.V. Verba[2], R. Zivieri[3], A. Laudani[4], V. Puliafito[5], G. Gubbiotti[6], R. Tomasello[7], G. Siracusano[8], B. Azzerboni[5], M. Carpentieri[9], A.N. Slavin[10] and G. Finocchio[1] *1. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy; 2. Institute of Magnetism, Kyiv, Ukraine; 3. Department of Physics and Earth Sciences, University of Ferrara, Ferrara, Italy; 4. Department of Engineering, University of Roma Tre, Roma, Italy; 5. Department of Engineering, University of Messina, Messina, Italy; 6. IOM-CNR, Perugia, Italy; 7. Department of Engineering, Polo Scientifico Didattico di Terni, Università di Perugia, Perugia, Italy; 8. Department of Electronic Engineering, Industrial Chemistry and Engineering, University of Messina, Messina, Italy; 9. Ingegneria Elettrica e dell'Informazione, Politecnico of Bari, Bari, Italy; 10. Physics, Oakland University, Rochester Hills, MI*

3:30

**BB-09**. **Ultra-low-current spin Hall nano-oscillators based on NiFe/W bilayers.** *H. Mazraati*[1,2], S. Chung[2,3], A. Houshang[3], F. Qejvanaj[1,2], S. Jiang[2], T.Q. Le[2] and J. Åkerman[1,3] *1. NanOsc AB, Stockholm, Sweden; 2. Materials and Nano Physics, School of ICT, KTH Royal Institute of Technology, Stockholm, Sweden; 3. Physics, University of Gothenburg, Gothenburg, Sweden*

3:42

**BB-10**. **Enhancement of Spin Hall Oscillator Power via Giant Magneto-Resistance Effect.** *J. Chen*[1], A. Smith[1] and I. Krivorotov[1] *1. Physics and Astronomy, University of California, Irvine, Irvine, CA*

3:54

**BB-11**. **Spin Hall and spin swapping torques in ferromagnets.** *C. Ortiz Pauyac*[1,2], S. Nikolaev[2], M. Chshiev[2] and A. Manchon[3] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 2. UMR 8191 CEA/CNRS/UJF, SPINTEC, Grenoble, France; 3. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

4:06

**BB-12**. **Contribution of the Spin Hall Effect Generated Spin Current to the Field-like Spin-orbit Torque in Normal Metal/Ferromagnet Heterostructures.** *Y. Ou*[1], C. Pai[2], S. Shi[1], D. Ralph[1] and R. Buhrman[1] *1. Cornell University, Ithaca, NY; 2. National Taiwan University, Taipei, Taiwan*

4:18

**BB-13**. **Compositional dependence of interfacial spin-orbit phenomena in $Co_xFe_{1-x}$ / Pt bilayers.** *E. Edwards*[1], J. Shaw[1], M. Weiler[2,3] and H. Nembach[1] *1. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO; 2. Walther-Meißner-Institut, Bayerische Akademie der Wissenschaften, Garching, Germany; 3. Physik-Department, Technische Universität München, Garching, Germany*

### Session BC

## MAGNETIC SKYRMIONS II

Vincent Cros, Chair
Unité Mixte de Physique CNRS/Thales, Palaiseau, France

**1:30**

**BC-01**. **Skyrmion Generation by Domain Wall and Magnetic Skyrmion Motion in the Antiferromagnetically Exchange-coupled Bilayer System.** ***(Invited)*** *Y. Zhou*[1] *1. Physics, The University of Hong Kong, Hong Kong, Hong Kong*

**2:06**

**BC-02**. **Current-induced skyrmion dynamics in symmetric bilayers.** *A. Hrabec*[1], I. Gross[2], J. Sampaio[1], M. Belmeguenai[3], W. Akhtar[2], V. Jacques[2], A. Thiaville[1] and S. Rohart[1] *1. Lab. Physique des Solides, Universite Paris-Sud, Orsay, France; 2. Laboratoire Charles Coulomb, CNRS, Montpellier, France; 3. LSPM, Université Paris 13, Villetaneuse, France*

**2:18**

**BC-03**. **Magnetic Skyrmion Racetrack Memory with Voltage Manipulation.** *W. Kang*[1], Y. Huang[1], X. Zhang[2], Y. Zhou[2] and W. Zhao[1] *1. Beihang University, Beijing, China; 2. University of Hong Kong, Hong Kong, China*

**2:30**

**BC-04**. **Topological Torques in Magnetic Skyrmions and Vortices.** *C.A. Akosa*[1], P.B. Ndiaye[1] and A. Manchon[1] *1. Material Science & Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

**2:42**

**BC-05**. **Stability of interfacial Skyrmions, Solitons and Bound Monopoles: How to store Energy in topological magnetic Quasiparticles.** ***(Invited)*** *O. Vedmedenko*[1] *1. University of Hamburg, Hamburg, Germany*

**3:18**

**BC-06**. **Voltage controlled reversal of fixed magnetic skyrmions.** *D. Bhattacharya*[1], M. Al-Rashid[2] and J. Atulasimha[1] *1. Virginia Commonwealth University, Richmond, VA; 2. Electrical and Computer Engineering, Virginia Commonwealth University, Richmond, VA*

3:30

**BC-07**. **Room Temperature Planar Artificial Skyrmion Lattices.** *D.A. Gilbert*[1], T. Stückler[2], K. Lenz[3], I. Gilbert[4], J. Unguris[4], B.B. Maranville[1], J. Fassbender[3], H. Yu[2], K. Liu[5] and J. Borchers[1] *1. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD; 2. Fert Beijing Research Institute, School of Electronic and Information Engineering, Beihang University, Beijing, China; 3. Helmholtz-Zentrum Dresden-Rossendorf, Institute of Ion Beam Physics and Materials Research, Dresden, Germany; 4. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD; 5. Physics Department, University of California. Davis, CA*

3:42

**BC-08**. **Ultrafast dynamics of skyrmions in multiferroic compound $Cu_2OSeO_3$.** *S. Roy*[1], M. Langner[2], S. Huang[1], Y. Chuang[1], J.C. Lee[1], G. Dakovski[3], J. Turner[3], J. Robinson[2], S. Seki[4], Y. Tokura[4] and R. Schoenlein[3] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 2. Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA; 3. LCLS, SLAC National Accelerator Laboratory, Menlo Park, CA; 4. RIKEN, Center for Emergent Matter Science, Wako 351-0198, Japan*

3:54

**BC-09**. **Skyrmion Gas Manipulation for Unconventional Computing.** *D. Pinna*[1], J. Kim[3], V. Cros[1], D. Querlioz[3], P. Bessière[2], J. Droulez[2] and J. Grollier[1] *1. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 2. Institut des Systèmes Intelligents et de Robotique - UPMC, Paris, France; 3. C2N Centre for Nanoscience and Nanotechnology - CNRS, Univ. Paris-Sud, Orsay, France*

4:06

**BC-10**. **Skyrmionic Synaptic Device With Weight Plastisity.** *Y. Huang*[1,2], W. Kang[1,2] and W. Zhao[1,2] *1. Fert Beijing Research Institute, Beihang University, Beijing, China; 2. Beijing Advanced Innovation Center for Big Data and Brain Computing (BDBC), Beihang University, Beijing, China*

4:18

**BC-11**. **Investigation of the Dzyaloshinskii-Moriya Interaction in W/CoFeB/MgO with room temperature skyrmions.** *S. Jaiswal*[1,2], K. Litzius[1,3], J. Langer[2], G. Jakob[1], B. Ocker[2] and M. Kläui[1] *1. Institute of Physics, Johannes Gutenberg Universität Mainz, Mainz, Germany; 2. Singulus Technologies AG, Kahl am Main, Germany; 3. Max Planck Institute for Intelligent Systems, Stuttgart, Germany*

## Session BD
# DOMAIN WALL AND DOMAIN WALL DEVICES I
Vincent Sokalski, Chair
Carnegie Mellon, Pittsburgh, PA

**1:30**

**BD-01**. **Adiabatic spin transfer torque induced domain wall creep in a magnetic metal.** ***(Invited)*** *S. Duttagupta*[1], S. Fukami[1,2], M. Yamanouchi[1,2], C. Zhang[1], H. Sato[2,3], F. Matsukura[1,2] and H. Ohno[1,2] *1. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 2. Centre for Spintronics Integrated Systems, Tohoku University, Miyagi, Japan; 3. Centre for Innovative Integrated Electronic Systems, Tohoku University, Sendai, Japan*

**2:06**

**BD-02**. **Spin-orbit torque induced high speed domain wall motion in Co/Pt dual stack.** *P. Sethi*[1,2], S. Krishnia[1], W. Gan[1], F.N. Kholid[1], Y. Chen[2], S.H. Leong[2] and W. Lew[1] *1. Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 2. Data Storage Institute, (A*STAR) Agency for Science, Technology and Research, Singapore, Singapore*

**2:18**

**BD-03**. **Efficient Magnetic Domain Wall Propagation by Spin Transfer Torque in Ferrimagnetic Alloys.** J. Sampaio[1], R. Weil[1], E. Haltz[1] and *A. Mougin*[1] *1. CNRS, Univ. Paris-Sud, Universite Paris-Saclay, Laboratoire de Physique des Solides, Orsay, France*

**2:30**

**BD-04**. **Synthetic ferrimagnet nanowires with very low critical current density for coupled domain wall motion.** S. Lepadatu[1,2], H.M. Saarikoski[3], R. Beacham[4], M. Benitez[4], T. Moore[1], G. Burnell[1], S. Sugimoto[1], D. Yesudas[1], M.C. Wheeler[1], J. Miguel[5], S. Dhesi[5], D. McGrouther[4], S. McVitie[4], G. Tatara[3] and *C.H. Marrows*[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. School of Physical Sciences and Computing, University of Central Lancashire, Preston, United Kingdom; 3. RIKEN CEMS, Wako, Saitama, Japan, Wako, Japan; 4. Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 5. Diamond Light Source, Didcot, United Kingdom*

**2:42**

**BD-05**. **Precession Torque Driven Domain Wall Motion in Out Of Plane Materials.** *M. Peeters*[1], F. Ummelen[1], M.L. Lalieu[1], J. Kim[1], H. Swagten[1] and B. Koopmans[1] *1. Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

**2:54**

**BD-06**. **Ring-shaped Racetrack memory based on spin orbit torque driven chiral domain wall motion.** *Y. Zhang*[1], X. Zhang[1,2], J. Hu[3], J. Nan[1], Z. Zheng[1], Z. Zhang[1], Y. Zhang[1], N. Vernier[2], D. Ravelosona[2] and W. Zhao[1] *1. Fert Beijing Institute, Beihang University, Beijing, China; 2. IEF, Univ. Paris-Sud/CNRS, Orsay, France; 3. School of Electrical and Computer Engineering, Oklahoma State University, Stillwater, OK*

**3:06**

**BD-07**. **Withdrawn**

**3:18**

**BD-08**. **Local studies of domain wall dynamics using anomalous Nernst effect.** *J. Wells*[1], P. Krzysteczko[2], H.W. Schumacher[2], R. Mansell[3], R. Cowburn[3] and O. Kazakova[1] *1. National Physical Laboratory, Teddington, United Kingdom; 2. Nanomagnetism, PTB, Braunschweig, Germany; 3. University of Cambridge, Cambridge, United Kingdom*

**3:30**

**BD-09**. **Influence of Interfacial Dzyaloshinskii-Moriya Interaction and Damping on Domain Wall Behaviour in Structurally Modulated Nanowires.** J. Brandao[1,2] and *D. Atkinson*[1,2] *1. Durham University, Durham, United Kingdom; 2. Centre for Materials Physics, Durham University, Durham, United Kingdom*

**3:42**

**BD-10**. **Electric-current-induced dynamics of bubble domains in ferrimagnetic Tb/Co multilayer wires below and above the magnetic compensation point.** *M. Tanaka*[1], S. Sumitomo[1], N. Adachi[1], S. Honda[2], A. Hiroyuki[3] and K. Mibu[1] *1. Nagoya Institute of Technology, Nagoya, Japan; 2. Kansai University, Suita, Japan; 3. Toyota Technological Institute, Nagoya, Japan*

**3:54**

**BD-11**. **Inner interface effect enhances spin-orbit torques in Tb/Co multilayered wires.** *B. Do*[1,5], J. Yu[3], X. Qiu[3], A. Hiroyuki[1], A. Manchon[4] and H. Yang[2] *1. Toyota Technological Institute, Nagoya, Japan; 2. National University of Singapore, Singapore, Singapore; 3. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 4. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 5. Institute of Materials Science, Hanoi, Hanoi, Vietnam*

**4:06**

**BD-12**. ***In Situ* TEM Investigation of Domain Walls in Nanostructured FeRh-Based Thin Films.** *T.P. Almeida*[1], R.C. Temple[2], J. Massey[2], K. Fallon[1], D. McGrouther[1], C.H. Marrows[2] and S. McVitie[1] *1. School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom*

**4:18**

**BD-13**. **Chiral Magnetic Domain Walls Revealed by Resonant Soft X-ray Diffraction.** *P. Shafer*[1], G. Chen[2], A.T. N'Diaye[1], Y. Wu[4], A.K. Schmid[5] and E. Arenholz[1,5] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 2. National Center for Electron Microscopy, Lawrence Berkeley National Laboratory, Berkeley, CA; 4. Physics Department, Fudan University, Shanghai, China; 5. Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA*

TUESDAY AFTERNOON 1:30 — LA GALERIES 4-5

## Session BE

# MULTI-LAYER FILMS AND SUPERLATTICES I

Jose de la Venta, Chair
Colorado State University, Fort Collins, CO

**1:30**

**BE-01**. **Enhanced Ordering Temperature and Emergent Spin Structure at Magnetic Topological Insulator / Antiferromaget Interfaces.** *A. Grutter*[1], Q. He[2], X. Kou[2,3], L. Pan[2], X. Che[2], Y. Liu[2], D.A. Gilbert[1], S.M. Disseler[1], B.J. Kirby[1], J. Borchers[1], W.D. Ratcliff[1], P. Shafer[4], A.T. N'Diaye[4], E. Arenholz[4] and K.L. Wang[2] *1. NIST Center for Neutron Research, NIST, Gaithersburg, MD; 2. Department of Electrical Engineering, University of California, Los Angeles, Los Angeles, CA; 3. School of Information Science and Technology, ShanghaiTech University, Shanghai, China; 4. Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA*

**1:42**

**BE-02**. **Impact of Seed Layer Diffusion on the Properties of Co/Ni Multilayers with Perpendicular Magnetic Anisotropy.** *E. Liu*[1,2], J. Swerts[1], T. Devolder[3], S. Couet[1], S. Mertens[1], T. Lin[1], T. Conard[1], S. Van Elshocht[1], G.S. Kar[1], A. Furnemont[1] and J. De Boeck[1,2] *1. Imec, Leuven, Belgium; 2. Department of Electrical Engineering, KU Leuven, Leuven, Belgium; 3. IEF, Orsay, France*

**1:54**

**BE-03**. **Dzyaloshinskii-Moriya interaction in Pt/Co/Pt films prepared by chemical vapor deposition with various substrate temperatures.** *M. Quinsat*[1], Y. Ootera[1], T. Shimada[1], M. Kado[1], S. Hashimoto[1], H. Morise[1], S. Nakamura[1] and T. Kondo[1] *1. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan*

**2:06**

**BE-04**. **Engineering of positive and negative perpendicular magnetic anisotropy in W/Fe/W trilayer.** Y. Matsumoto[1], *S. Okamoto*[1,2], N. Kikuchi[1,2], O. Kitakami[1,2] and Y. Miura[3] *1. IMRAM, Tohoku University, Sendai, Japan; 2. CSRN, Tohoku University, Sendai, Japan; 3. Electrical Engineering and Electronics, Kyoto Institute of Technology, Kyoto, Japan*

**2:18**

**BE-05**. **Reconfigurable magnetic states in multi-layered synthetic antiferromagnets.** *A. Fernandez-Pacheco*[1], N. Steinke[2], A. Welbourne[1], S. Chin[1], D. Mahendru[1], R. Mansell[1], D.C. Petit[1], J. Lee[1], R. Dalgliesh[2], S. Langridge[3] and R. Cowburn[1] *1. University of Cambridge, Cambridge, United Kingdom; 2. Rutherford Appleton Laboratory, ISIS Neutron Source, Oxon, United Kingdom; 3. Rutherford Appleton Laboratory, Chilton, United Kingdom*

**2:30**

**BE-06**. **Exchange Spring Effect in Py/Gd Bilayer and Multilayer Films.** *P.N. Lapa*[1,2], J. Ding[1], J.E. Pearson[1], V. Novosad[1], S. Jiang[1] and A. Hoffmann[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Department of Physics and Astronomy, Texas A&M University, College Station, TX*

**2:42**

**BE-07**. **$T_C$ Localization Limit in Compositionally Graded $Co_{1-x}Ru_x$ alloy films.** *B.J. Kirby*[1], L. Fallarino[2], M. Pancaldi[2], P. Riego[2] and A. Berger[2] *1. NIST Center for Neutron Research, NIST, Gaithersburg, MD; 2. CIC nanoGUNE, San Sebastian - Donostia, Spain*

**2:54**

**BE-08**. **Probing the depth dependent magnetization of FeGa/NiFe multilayers using polarized neutron reflectometry.** *C.R. Rementer*[1], M.E. Jamer[2], J. Borchers[2], A. Grutter[2], B.J. Kirby[2], Q. Xu[3], P. Nordeen[4], G. Carman[4], Y. Wang[3] and J.P. Chang[1] *1. Chemical and Biomolecular Engineering, UCLA, Los Angeles, CA; 2. Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD; 3. Electrical Engineering, UCLA, Los Angeles, CA; 4. Mechanical & Aerospace Engineering, UCLA, Los Angeles, CA*

**3:06**

**BE-09**. **Magnetic Proximity Asymmetries Illuminated by Combined PNR and XRMS Profiling of Pt/CoFeBTa/Pt Trilayers.** *C. Kinane*[1], O. Inyang[5], L. Bouchenoire[3], M. Tokac[5], T. Charlton[1,4], T.P. Hase[2], D. Atkinson[5] and A. Hindmarch[5] *1. Rutherford Appleton Laboratory, STFC, Didcot, United Kingdom; 2. Physics, University of Warwick, Coventry, United Kingdom; 3. XMaS, ESRF, Grenoble, France; 4. SNS, Oak Ridge National Lab, Oak Ridge, TN; 5. Durham University, Durham, United Kingdom*

**3:18**

**BE-10**. **Giant scaling of spin-orbit torques in ferrimagnetic Co/Tb multilayers.** *J. Yu*[1], B. Do[2], X. Qiu[3], R. Mishra[1], A. Hiroyuki[2] and H. Yang[1] *1. National University of Singapore, Singapore, Singapore; 2. Toyota Technological Institute, Nagoya, Japan; 3. Shanghai Key Laboratory of Special Artificial Macrostructure Materials and Technology, Tongji University, Shanghai, China*

**3:30**

**BE-11**. **Topological non-trivial magnetic textures in NiFe/CoPd nanostructures.** A. Hierro-Rodriguez[1], D. Navas[1], X. Zhou[2], A. Adeyeye[2], R.V. Verba[1,3], B. Ivanov[3], K. Guslienko[4,5] and *G.N. Kakazei*[1] *1. IFIMUP-IN/Department of Physics, University of Porto, Porto, Portugal; 2. Electrical & Computer Engineering, National University of Singapore, Singapore, Singapore; 3. Institute of Magnetism, Kyiv, Ukraine; 4. Fisica de Materiales, Universidad del Pais Vasco UPV/EHU, San Sebastian, Spain; 5. IKERBASQUE, the Basque Foundation for Science, Bilbao, Spain*

**3:42**

**BE-12**. **Switching Study of Exchange-Coupled Nanomagnets by Vector Coil Vibrating Sample Magnetometry.** *H.S. Dey*[1], G. Csaba[1], G.H. Bernstein[1], A. Orlov[1] and W. Porod[1] *1. Electrical Engineering, University of Notre Dame, South Bend, IN*

**3:54**

**BE-13**. **Origin of antiferromagnetism at the Fe/$Fe_3O_4$ interface.** *A. Pratt*[1], X. Sun[2], J. Zhang[1], M. Kurahashi[3] and Y. Yamauchi[3] *1. Physics, University of York, York, United Kingdom; 2. University of Science and Technology of China, Hefei, China; 3. National Institute for Materials Science, Tsukuba, Japan*

**4:06**

**BE-14**. **Growth, structure, and magnetic properties of epitaxial $NiFe_2O_4$ films grown on Si(111) substrates.** *R. Nakane*[1,2] and M. Tanaka[1,3] *1. Dept of Electronic Engineering, Univ Tokyo, Tokyo, Japan; 2. Institute for Innovation in International Engineering Education, Univ. of Tokyo, Tokyo, Japan; 3. Center for Spintronics Research Network (CSRN), Univ. of Tokyo, Tokyo, Japan*

**4:18**

**BE-15**. **Effect of Spatial Confinement on the Strain-modulated Phase Separation and Percolative Transport in $Pr_{0.7}(Ca_{0.6}Sr_{0.4})_{0.3}MnO_3$/PMN-PT Heterostructure.** *H. Kuang*[1], J. Wang[1], Y. Zhao[1], Y. Liu[1], F. Hu[1], J. Sun[1] and B. Shen[1] *1. State Key Laboratory of Magnetism, Institute of Physics, University of Chinese Academy of Sciences, Chinese Academy of Sciences, Beijing, China*

## Session BF

# MRAM AND MAGNETIC LOGIC DEVICES II

Changman Park, Chair
Tokyo Electron Ltd, San Jose, CA

**1:30**

**BF-01**. **Non-Volatile Magnetic Logic-Memory Device.** ***(Invited)*** *X. Zhang*[1] *1. School of Materials Science and Engineering, Tsinghua University, Beijing, China*

**2:06**

**BF-02**. **Multilevel thermally assisted magnetoresistive random access memory based on exchange–biased vortex configurations.** *C. Levartoski de Araujo*[1,2], L.D. Buda-Prejbeanu[2] and B. Diény[2] *1. Universidade Federal de Viçosa, Viçosa, Brazil; 2. CEA, INAC-SPINTEC, Grenoble, France*

**2:18**

**BF-03**. **Low-Power Spin-Valve and Doman-Wall Non-volatile Logic.** *S. Chang*[1], S. Manipatruni[2], D.E. Nikonov[2], I. Young[2] and A. Naeemi[1] *1. Georgia Institute of Technology, Atlanta, GA; 2. Components Research, Intel, Hillsboro, OR*

**2:30**

**BF-04**. **Towards Chirality-Encoded Domain Wall Logic Devices.** K.A. Omari[1], T.J. Broomhall[2], R.W. Dawidek[2], R. Bradley[2], M. Hodges[2], M. Rosamond[3], E. Linfield[3], P. Fischer[4,5], M. Im[6,7] and *T.J. Hayward*[2] *1. Material Engineering, University of Sheffield, Sheffield, United Kingdom; 2. Department of Materials Science and Engineering, University of Sheffield, Sheffield, United Kingdom; 3. School of Electronic and Electrical Engineering, University of Leeds, Leeds, United Kingdom; 4. Lawrence Berkley National Laboratory, Berkeley, CA; 5. Department of Physics, University of California, Santa Cruz, Santa Cruz, CA; 6. CXRO, Lawrence Berkeley National Laboratory, Berkeley, CA; 7. Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea*

**2:42**

**BF-05**. **Reconfigurable Magnetic Nanostructures for Logic and Magnonic Applications.** ***(Invited)*** *A. Adeyeye*[1], A. Haldar[1] and X. Zhou[1] *1. Electrical & Computer Engineering, National University of Singapore, Singapore, Singapore*

**3:18**

**BF-06**. **Cryogenic Cooling Post MgO Promoting The Free Layer Coercivity And TMR In Perpendicular Bottom Pinned Co/Ni STT-MRAM Devices.** *J. Swerts*[1], S. Mertens[1], S. Couet[1], T. Lin[1], E. Liu[1], Y.F. Tomczak[1], S. Rao[1], W. Kim[1], S. Van Elshocht[1], A. Furnemont[1], G.S. Kar[1], K. Nishimura[2], H. Okuyama[2], T. Seino[2] and K. Tsunekawa[2] *1. imec, Leuven, Belgium; 2. Canon ANELVA, Kawasaki, Japan*

**3:30**

**BF-07**. **Nanosecond-timescale low error switching of in-plane magnetic tunnel junctions through dynamic Oersted-field assisted spin-Hall effect.** *S.V. Aradhya*[1], G. Rowlands[1,2], J. Oh[1], D. Ralph[1,3] and R. Buhrman[1] *1. Cornell University, Ithaca, NY; 2. Raytheon BBN Technologies, Ithaca, NY; 3. Kavli Institute at Cornell, Ithaca, NY*

**3:42**

**BF-08**. **Exchange coupling in $Co_2FeSi/Mn_3Ge$ bilayers with high spin polarization and perpendicular magnetic anisotropy.** *S. Nakagawa*[1], N. Matsushita[1], Y. Naganuma[1], T. Yabushita[1], Y. Takamura[1] and Y. Sonobe[2] *1. School of Engineering, Tokyo Institute of Technology, Tokyo, Japan; 2. Samsung R&D Institute Japan, Yokohama, Japan*

**3:54**

**BF-09**. **Asymmetric magnetization switching probability in STT driven perpendicular magnetic tunnel junction.** *M.P. Lavanant*[1], S. Petit-Watelot[2], G.D. Chaves-O'Flynn[3], V. Lomakin[4], J. Sun[5], A.D. Kent[6] and S. Mangin[2] *1. Spintronics & Nanomagntism, Université de Lorraine, Toulouse, France; 2. Institut Jean Lamour, Universite de Lorraine, Vandoeuvre-les-Nancy, France; 3. Mathematical Sciences, New Jersey Institute of Technology, Newark, NJ; 4. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA; 5. IBM Research, Yorktown Heights, NY; 6. Department of Physics, New York University, New York, NY*

**4:06**

**BF-10**. **Strain Assisted Logic Propagation in *Scalable* Circular Magnetic Nanodot Wire.** *M. Al-Rashid*[1,2], M. Salehi-Fashami[4], W. Sun[3], P. Nordeen[3], A. Chavez[3], S. Bandyopadhyay[1], G. Carman[3] and J. Atulasimha[2,1] *1. Electrical and Computer Engineering, Virginia Commonwealth University, Richmond, VA; 2. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA; 3. Mechanical and Aerospace Engineering, University of California, Los Angeles, CA; 4. Physics and Astronomy, University of Delaware, Newark, DE*

**4:18**

**BF-11**. **Evaluation of Spin Orbit Memories for High Performance Embedded Spintronics.** *S. Manipatruni*[1], D.E. Nikonov[1] and I. Young[1] *1. Intel Components Research, Portland, OR*

## Session BG
# HYPERTHERMIA, MRI, AND OTHER BIO-ASSAYS I
Hariharan Srikanth, Chair
University of South Florida, Tampa, FL

**1:30**

**BG-01**. **Mixed Ferrites Core/Shell Nanoparticles based Ferrofluids for Hyperthermia and Magnetic Cooling Applications.** V. Pilati[1], G.S. Gomide[2], P. Coppola[3], R. Cabreira Gomes[2], F. Gomes da Silva[2], F. Luis de Oliveira Paula[2], G. Goya[4], R. Perzynski[5], J. Depeyrot[2] and *R. Aquino*[6] *1. Departamento de Física, Universidade de Brasília, Brasília, Brazil; 2. Institute of Physics, Universidade de Brasília, Brasília, Brazil; 3. Institute of Chemistry, Universidade de Brasilia, Brasilia, Brazil; 4. Aragon Institute of Nanoscience, Universidad de Zaragoza, Zaragoza, Spain; 5. Laboratoire PHENIX, Université Pierre et Marie Curie, Paris, France; 6. Material Science Program, Universidade de Brasília, Brasília, Brazil*

**1:42**

**BG-02**. **Magnetic hysteresis in $Ni_{80}Fe_{20}$ nanodisks for hyperthermia.** *P. Tiberto*[2], G. Barrera[2], F. Celegato[2], M. Coisson[2], R. Ferrero[1,2] and A. Manzin[2] *1. Dipartimento di Elettronica e Telecomunicazioni, Politecnico di Torino, Torino, Italy; 2. INRIM, Torino, Italy*

**1:54**

**BG-03**. **Anisotropic Magnetic Nanostructures For Enhanced Hyperthermia.** *Z. Nemati*[1], J. Alonso Masa[2], R. Das[1], E. Garaio[3], I. Rodrigo[2], J. García[4,2], M. Phan[5] and H. Srikanth[1] *1. Physics, University of South Florida, Tampa, FL; 2. BCMaterials, Derio, Spain; 3. Electricty and Electronics, University of Basque Country, Leioa, Spain; 4. Applied Physics II, University of Basque Country, Leioa, Spain; 5. Department of Physics, University of South Florida, Tampa, FL*

**2:06**

**BG-04**. **Multi-Segmented Magnetic Nanowires as Advanced Nanorobotic Platforms for Biomedical Applications. *(Invited)*** *J. Sort*[1], J. Zhang[1], S. Agramunt-Puig[1], N. del Valle[1], C. Navau[1], S. Estradé[2], F. Peiró[2], S. Pané[3], A. Sánchez[1], J. Nogués[4] and E. Pellicer[1] *1. Physics, Universitat Autonoma de Barcelona, Bellaterra, Spain; 2. Universitat de Barcelona, Barcelona, Spain; 3. ETHZ, Zurich, Switzerland; 4. Catalan Institute of Nanoscience and Nanotechnology, Bellaterra, Spain*

**2:42**

**BG-05**. **Superparamagnetic response from nanoparticles in splenic macrophages.** *U. Wiedwald*[1], M. Spasova[1], A. Elsukova[1], Z. Ma[1] and M. Farle[1,2] *1. Faculty of Physics and Center for Nanointegration, University of Duisburg-Essen, Duisburg, Germany; 2. Center for Functionalized Magnetic Materials, Immanuel Kant Baltic Federal University, 236041 Kaliningrad, Russian Federation*

**2:54**

**BG-06**. **Magnetic field controlled oscillations of Fe-Cr-Nb-B magnetic particles for destruction of osteosarcoma cells.** *H. Chiriac*[1], E. Radu[1], D. Herea[1], G. Stoian[1], T.A. Ovari[1] and N. Lupu[1] *1. National Institute of R&D for Technical Physics, Iasi, Romania*

**3:06**

**BG-07**. **Zinc Doped Copper Ferrite Particles as Temperature Sensors for Magnetic Resonance Imaging.** *J.H. Hankiewicz*[1], N. Alghamdi[2], N.M. Hammelev[3], N.R. Anderson[1], R.E. Camley[2], M. Przybylski[4], J. Zukrowski[5] and Z. Celinski[2] *1. BioFrontiers, University Colorado Colorado Springs, Colorado Springs, CO; 2. Physics, University of Colorado, Colorado Springs, Colorado Springs, CO; 3. Engineering Physics, Colorado School of Mines, Golden, CO; 4. Academic Centre for Materials and Nanotechnology, Krakow, Poland; 5. Physics, AGH University of Science and Technology, Cracow, Poland*

**3:18**

**BG-08**. **Electrodeposited Fe and Fe-Au Nanowires as MRI Contrast Agents.** *D. Shore*[1], S. Pailloux[2], J. Zhang[3], M. Garwood[3], V.C. Pierre[2] and B. Stadler[4] *1. Chemical Engineering, University of Minnesota, Minneapolis, MN; 2. Chemistry, University of Minnesotta, Minneapolis, MN; 3. Radiology, University of Minnesota, Minneapolis, MN; 4. Electrical Engineering, University of Minnesota, Minneapolis, MN*

**3:30**

**BG-09**. **A New Actuator Design for Focusing Magnetic Micro/nano-carrier in Targeted Drug Delivery.** X. Zhang[1,2], L. Tuan-Anh[1] and *J. Yoon*[1] *1. Gyeongsang National University, Jinju-si, The Republic of Korea; 2. School of Naval Architecture and Ocean Engineering, Harbin Institute of Technology at Weihai, Shandong, China*

**3:42**

**BG-10**. **Soft anisotropic magnetic polymer composites for efficient magnetophoretic trapping applications in microfluidic devices.** *K. Bhattacharya*[1,2], S. Mekkaoui[2], P. Deb[1], V. Dupuis[2], A. Tamion[2], J. Desgouttes[3], A. Deman[3] and D. Le Roy[2] *1. Physics, Tezpur University, Tezpur, India; 2. Institut Lumière Matière, Villeurbanne, France; 3. Institut des Nanotechnologies de Lyon, Villeurbanne, France*

**3:54**

**BG-11**. **Microfluidic Platform For Cell Membrane Deformation Utilizing Magnetic Particles.** *G. Kokkinis*[1] and I. Giouroudi[1,2] *1. Vienna University of Technology, Vienna, Austria; 2. DWI - Leibniz Institute for Interactive Materials, Aachen, Germany*

**4:06**

**BG-12**. **Magnetic Control of Active Substrates for Mechanical Excitation of Single Cells.** *T. Devillers*[1,2], C. Bidan[3,4], M. Fratzl[2,1], P. Moreau[3,4], G. Shaw[2,1], A. Dupont[3,4] and N. Dempsey[2,1] *1. Institut NEEL, Université Grenoble Alpes, Grenoble, France; 2. Institut NEEL - CNRS, Grenoble, France; 3. LIPhy, CNRS, Grenoble, France; 4. LIPhy, Université Grenoble Alpes, Grenoble, France*

**4:18**

**BG-13**. **Dissecting cellular dynamics with magnetically actuated micropost arrays.** *Y. Shi*[1], J.C. Crocker[2] and D. Reich[1] *1. Physics and Astronomy, Johns Hopkins University, Baltimore, MD; 2. Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA*

TUESDAY
AFTERNOON
1:30

STUDIO 7-8

## Session BH
# MAGNETIC INSTRUMENTATION AND CHARACTERIZATION I
Dario Arena, Chair
University of South Florida, Tampa, FL

**1:30**

**BH-01**. ***In-situ* imaging techniques for the study of magnetocaloric materials. *(Invited)*** *A. Waske*[1,2], A. Funk[1,2], A. Rack[3] and R. Schaefer[1,2] *1. IFW Dresden, Dresden, Germany; 2. TU Dresden, Dresden, Germany; 3. ESRF, Grenoble, France*

**2:06**

**BH-02**. **Soft magnetic sensors for the visualization of supercurrents.** *C. Stahl*[1], S. Ruoss[1], P. Zahn[1,2], J. Bayer[1,2], J. Gräfe[1], G.A. Schuetz[1] and J. Albrecht[2] *1. Max Planck Institute for Intelligent Systems, Stuttgart, Germany, Stuttgart, Germany; 2. Research Institute for Innovative Surfaces FINO, Aalen University, Aalen, Germany*

**2:18**

**BH-03**. **CORELLI for Magnetism and Magnetic Materials: The Elastic Diffuse Neutron Scattering Spectrometer at SNS.** *Y. Liu*[1], F. Ye[1], W. Ross[1], J. Carruth[1] and G. Rennich[1] *1. Instrument and Source Division, Oak Ridge National Laboratory, Oak Ridge, TN*

**2:30**

**BH-04**. **Pure nuclear resonant surface diffraction at magnetic nanostructures.** *K. Schlage*[1], L. Dzemiantsova[1,2], L. Bocklage[1,2], H. Wille[1], G. Meier[2,3] and R. Röhlsberger[1,2] *1. Photon Science, DESY, Hamburg, Germany; 2. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany; 3. Max Plank Institute for the Structure and Dynamics of Matter, Hamburg, Germany*

**2:42**

**BH-05**. **Spin chirality induced X-ray magnetic circular dichroism and new type of chiral spin textures in in-plane magnet.** ***(Invited)*** *G. Chen*[1] *1. National Center for Electron Microscopy, Lawrence Berkeley National Laboratory, Berkeley, CA*

**3:18**

**BH-06**. **Direct observation of temperature-driven magnetic symmetry transitions by vectorial-resolved MOKE magnetometry.** *J. Fernandez Cunnado*[2,1], F. Pedrosa[1], F. Ajejas[1], A. Bollero[1], P. Perna[1], R. Miranda[1,2] and J. Camarero[2,1] *1. IMDEA NANOSCIENCE, Madrid, Spain; 2. Universidad Autónoma de Madrid, Madrid, Spain*

**3:30**

**BH-07**. **Understanding the kinetics of ink drying through *in operando* Magneto-optical Kerr Effect.** *P. Silwal*[1], S. Engmann[1], L. Richter[1], C. Snyder[1], C. Dennis[1] and J.W. Lau[1] *1. Material Measurement Laboratory, National Institute of Standards and Technology, Gaithersburg, MD*

**3:42**

**BH-08**. **Direct Measurement and Microscale Mapping of nanoNewton to milliNewton Magnetic Forces.** *C. Velez*[1], R. Carroll[1] and D.P. Arnold[1] *1. Electrical and Computer Engineering, University of Florida, Gainesville, FL*

**3:54**

**BH-09**. **Vibrating Sample Magnetometer (VSM) 2D and 3D Magnetization Hysteresis Effects Associated with Different Initial Magnetization Conditions.** *R.E. Lukins*[1] *1. R&D, Measurement Analysis Corporation, Torrance, CA*

**4:06**

**BH-10**. **High performance THz emitters based on heavy metal/ ferromagnet heterostructures.** *Y. Wu*[1], M. Elyasi[1], X. Qiu[2], L. Ke[3] and H. Yang[1] *1. National University of Singapore, Singapore, Singapore; 2. Tongji University, Shanghai, China; 3. Institute of Materials Research and Engineering (IMRE), Singapore, Singapore*

**4:18**

**BH-11**. **Brain-inspired Computing Using the Transient Dynamics of Spin-torque Oscillators.** *M. Riou*[1*], J. Torrejon[1], F. Abreu Araujo[1], M. Stiles[2], G. Khalsa[2], S. Tsunegi[3], A. Fukushima[3], H. Kubota[3], S. Yuasa[3], D. Querlioz[4], V. Cros[1] and J. Grollier[1] *1. Unité Mixte CNRS/Thales, Palaiseau, France; 2. National Institute of Standards and Technology - Gaithersburg, Gaithersburg, MD; 3. Spintronics Research Center, National Institute of Advanced Industrial Science And Technology (AIST), Tsukuba, Japan; 4. IEF, Orsay, France*

## Session BI
# SUPERCONDUCTIVITY AND CRITICAL PHENOMENA

Nathan Satchell, Chair
ISIS Neutron and Muon Facility, Didcot, United Kingdom

**1:30**

**BI-01**. **Neuromorphic Computing using Magnetically Tunable Josephson Junctions.** *S.E. Russek*[1], M. Schneider[1] and C.A. Donnelly[1] *1. NIST, Boulder, CO*

**1:42**

**BI-02**. **Magnetoresistive response of single–crystalline Ni nanowires with superconducting contacts.** *S. Manna*[1], H. Ren[2] and E.E. Fullerton[3] *1. Nanoengineering, University of California San Diego, La Jolla, CA; 2. Center for Memory and Recording Research, University of California San Diego, La Jolla, CA; 3. University of California San Diego, La Jolla, CA*

**1:54**

**BI-03**. **Magnetic and Superconducting Proximity Effects at Oxide Insulating Antiferromagnet / Superconductor Interfaces.** *W. Liu*[1,2], S. Cheng[3], R. Fan[4], D.M. Burn[4], A. Di Bernardo[1], J. Lin[3], P. Steadman[4], Y. Xu[2] and J. Robinson[1] *1. Department of Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom; 2. Electronics Department, University of York, York, United Kingdom; 3. Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan; 4. Diamond Light Source, Didcot, United Kingdom*

**2:06**

**BI-04**. **4D Magnetic mapping of Majorana Fermions in proximate honeycomb Kitaev material alpha-$RuCl_3$. *(Invited)*** *A. Banerjee*[1], J. Knolle[2], Y. Jiaqiang[3], M. Stone[1], M. Lumsden[1], T.A. David[1], R. Moessner[4] and S.E. Nagler[1] *1. Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, TN; 2. Department of Physics, Cambridge University, Cambridge, United Kingdom; 3. Material Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN; 4. Institute for Complex Systems, Max Planck Instute, Dresden, Germany*

**2:42**

**BI-05**. **Controlled Generation of Odd-frequency Triplet Superconductivity by Spin-orbit Coupling.** *N. Banerjee*[1], J. Ouassou[2], Y. Zhu[3], J. Linder[2] and M. Blamire[3] *1. Physics, Loughborough University, Loughborough, United Kingdom; 2. Physics, Norwegian University of Science and Technology (Trondheim), Trondheim, Norway; 3. Materials Science and Metallurgy, University of Cambridge, Cambridge, United Kingdom*

**2:54**

**BI-06**. **Identification of the low-energy excitations that cause dynamic scaling in a doped quantum critical system.** T. Heitmann[1], J. Lamsal[1,2], S. Watson[3], E. Ross[3], W. Chen[3], Y. Zhao[3,4] and *W. Montfrooij*[1,2] *1. The Missouri Research Reactor, University of Missouri, Columbia, MO; 2. Department of Physics and Astronomy, University of Missouri, Columbia, MO; 3. National Institute of Standards and Technology, Gaithersburg, MD; 4. Department of Materials Science and Engineering, University of Maryland, College Park, MD*

**3:06**

**BI-07**. **Theory of BEC and Superfluidity of Magnons in Yttrium Iron Garnet Films.** *V. Pokrovsky*[1,2] *1. Physics and Astronomy, Texas A&M University, College Station, TX; 2. Landau Institute for Theoretical Physics, Chernogolovka, Russian Federation*

**3:18**

**BI-08**. **Macroscopic Phase Diagram of The Chiral Helimagnet $Cr_{1/3}NbS_2$.** *E. Clements*[1], R. Das[1], L. Li[2], P. Lampen-Kelley[2], M. Phan[1], V. Keppens[2], D. Mandrus[2] and H. Srikanth[1] *1. Department of Physics, University of South Florida, Tampa, FL; 2. Department of Materials Science and Engineering, The University of Tennessee, Knoxville, TN*

**3:30**

**BI-09**. **Sc-induced Ferromagnetism in Magnetoresponsive $Gd_{5x}Sc_xGe_4$.** *Y. Mudryk*[1], J. Liu[1,2], D. Paudyal[1], K.A. Gschneidner[1,2] and V.K. Pecharsky[1,2] *1. The Ames Laboratory, U.S. Department of Energy, Iowa State University, Ames, IA; 2. Materials Science and Engineering, Iowa State University, Ames, IA*

**3:42**

**BI-10**. **Behavior of $U_4Ru_7Ge_6$ in the vicinity of thermal and quantum transitions.** *M. Vališka*[1], J. Valenta[1], P. Dolezal[1], V. Tkáč[1], J. Prokleska[1], M. Diviš[1] and V. Sechovsky[1] *1. Department of Condensed Matter Physics, Charles University in Prague, Prague, Czech Republic*

**3:54**

**BI-11**. **Ultrasharp magnetization steps in $LaFe_{12}B_6$ an amplitude-modulated antiferromagnetic itinerant-electron system.** *O. Isnard*[1] and L. Diop[1] *1. MCMF, Institut Néel, Université Grenoble Alpes, Grenoble, France*

**4:06**

**BI-12**. **Domain wall depinning as a critical phenomena: quantitative scaling of avalanches in soft magnetic materials.** *G. Durin*[1,3], F. Bohn[2], M.A. Correa[2], R.L. Sommer[4], K. Wiese[5] and P. Le Doussal[5] *1. Nanoscience and Material, Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 2. Fisica Teorica e Experimental, Univ. Federal do Rio Grande do Norte, Natal, Brazil; 3. ISI Foundation, Torino, Italy; 4. EXP, Centro Brasileiro de Pequisas Fisicas, Rio de Janeiro, Brazil; 5. CNRS-Lab. de Physique Théorique, Ecole Normale Supèrieure, Paris, France*

**BI-13**. **Spin Reorientation effect on Phonon Raman Scattering in $NdFeO_3$ Single Crystal.** *M.K. Singh*[1], G. Singh[1], A. Kumar[1] and B. Khan[1] *1. Centre of Material Sciences, University of Allahabad, Allahabad, India*

TUESDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session BP
# MICROMAGNETIC AND HYSTERESIS MODELING (Poster Session)

Dmytro Apalkov, Co-Chair
Samsung Semiconductor, Milpitas, CA
Sue Wang, Co-Chair
Samsung Semiconductor, San Jose, CA

**BP-01**. **Non-volatile spin-wave majority gate at the nanoscale.** *O. Zografos*[1,2], S. Dutta[3], M. Manfrini[1], B. Sorée[1,2], A. Naeemi[3], P. Raghavan[1], R. Lauwereins[1,2] and I.P. Radu[1] *1. Logic Technologies, Imec, Leuven, Belgium; 2. ESAT, KU Leuven, Leuven, Belgium; 3. Department of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA*

**BP-02**. **A compact physical model for the simulation of pNML-based architectures.** G. Turvani[1], *F. Riente*[1], E. Plozner[2], D. Schmitt-Landsiedel[1] and S. Breitkreutz-v. Gamm[1] *1. Institute for Technical Electronics, Technische Universität München, Munich, Germany; 2. Department of electronics and telecommunications, Politecnico di Torino, Turin, Italy*

**BP-03**. **A variable variance Preisach model for multilayers with perpendicular magnetic anisotropy.** *C. Garcia*[1], C.A. Ross[2], J. Akerman[3,4], R.K. Dumas[4], A.F. Franco[5], C.A. Gonzalez[6] and R. Morales[7] *1. Physics, UTFSM-Universidad Técnica Federico Santa María, Valparaiso, Chile; 2. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA; 3. Materials Physics, School of ICT, Royal Institute of Technology (KTH), Stockholm, Sweden; 4. Physics, University of Gothenburg, Gothenburg, Sweden; 5. Physics, Universidad Técnica Federico Santa Maria, Valparaiso, Chile; 6. Physics, UTFSM, Valparaiso, Chile; 7. Chemical-Physics Dept. & BCMaterials, University of Basque Country UPV/EHU & IKERBASQUE, Leioa, Spain*

**BP-04**. **Comparison of Limiting Loop Method and Elemental Operator Model for Magnetic Hysteresis of Silicon Steel Sheet.** W. Xu[1], N. Duan[1], *S. Wang*[1], J. Zhu[2] and Y. Guo[2] *1. Xi'an Jiaotong University, Xi'an, China; 2. University of Technology Sydney, Sydney, NSW, Australia*

**BP-05**. **Numerical Implementation of the Elemental Operator Method for Magnetic Hysteresis Model.** W. Xu[1], N. Duan[1], *S. Wang*[1], J. Zhu[2] and Y. Guo[2] *1. Xi'an Jiaotong University, Xi'an, China; 2. University of Technology Sydney, Sydney, NSW, Australia*

**BP-06**. **Refinement of the magnetic composite model of type 304 stainless steel by considering misoriented ferromagnetic martensite particles.** *K. Kinoshita*[1] *1. Department of Energy Conversion Science, Kyoto University, Kyoto-shi, Japan*

**BP-07**. **Investigation of effects of long-term thermal aging on magnetization processe in low-alloy pressure vessel steels using first-order-reversal-curves.** *S. Kobayashi*[1], F. Gillemot[2], A. Horvath[2], M. Horvath[2] and A. Laszlo[2] *1. Iwate University, Morioka, Japan; 2. KFKI Atomic Energy Research Institute, Budapest, Hungary*

**BP-08**. **High Frequency Characterization of Galfenol Minor Flux Density Loops.** *L. Weng*[1], X. Hu[1], Y. Sun[1], W. Huang[1] and B. Wang[1] *1. Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability of Hebei Province, Hebei University of Technology, Tianjin, China*

**BP-09**. **Magnetic Field Distribution Analysis for HTS Cable Considering Magnetic Hysteresis.** N. Duan[1], W. Xu[1], *S. Wang*[1] and J. Zhu[2] *1. Xi'an Jiaotong University, Xi'an, China; 2. University of Technology, Sydney, Sydney, NSW, Australia*

**BP-10**. **Improved Transient Magnetic Core Loss in Rotational Magnetization.** C. Zhang[1], *Y. Li*[1], Q. Yang[1] and J. Zhu[2] *1. Hebei University of Technology, TIANJIN, China; 2. University of Technology, Sydney, Sydney, NSW, Australia*

**BP-11**. **Vector Magnetization of a Distribution of Particles with Cubic Anisotropy.** *A. Jamali*[1], H. ElBidweihy[2], E. Della Torre[1] and E. Cardelli[3] *1. Department of Electrical and Computer Engineering, The George Washington University, Ashburn, VA; 2. Department of Electrical and Computer Engineering, United States Naval Academy, Annapolis, MD; 3. Dipartimento Ingegneria, Universita di Perugia, Perugia, Italy*

**BP-12**. **Double Langevin Function for Description of Anhysteretic Magnetization Curves.** S. Steentjes[1], M. Petrun[2], *G. Glehn*[1], D. Dolinar[2] and K. Hameyer[1] *1. Institute of Electrical Machines, RWTH Aachen University, Aachen, Germany; 2. FERI, University of Maribor, Maribor, Slovenia*

**BP-13**. **Effect of radial anisotropy distribution on the magnetic behavior of rapidly solidified amorphous nanowires.** C. Rotarescu[1], O. Chubykalo-Fesenko[2], M. Vázquez[2], H. Chiriac[1], N. Lupu[1] and *T.A. Ovari*[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Instituto de Ciencia de Materiales de Madrid (CSIC), Madrid, Spain*

**BP-14**. **FORC based study of interactions in 2D magnetic nanostructures. Experiment and simulation.** B. Negulescu[1], L. Stoleriu[2] and *A. Stancu*[2] *1. GREMAN, University Francois Rabelais, Tours, France; 2. Department of Physics, Alexandru Ioan Cuza University of Iasi, Iasi, Romania*

**BP-15**. **Nambu mechanics for stochastic magnetization dynamics.** *P. Thibaudeau*[1], T. Nussle[2] and S. Nicolis[2] *1. DAM, Commissariat à l'Energie Atomique, Monts, France; 2. Laboratoire de Mathématiques et Physique Théorique, Université François Rabelais, Tours, France*

## Session BQ
# MAGNETOELECTRONIC MATERIALS AND TRANSPORT I (Poster Session)
Ryan Desautels, Chair
Oak Ridge National Laboratory, Oak Ridge, TN

**BQ-01**. **Generation of Perpendicular Magnetic Anisotropy in $Co_2FeAl$ Full-Heusler Alloy Thin Film.** T. Huang[1], *X. Cheng*[1], X. Guan[1], S. Wang[1] and X. Miao[1] *1. School of Optical and Electronic Information, Huazhong University of Science & Technology, Wuhan, China*

**BQ-02**. **Magnetic anisotropy of epitaxial $Co_2Fe$-Ge Heusler alloy films on MgO (100) substrates.** *A. Pogorily*[1], A. Kravets[1,2], V. Nevdacha[1], D. Podyalovskiy[1], S. Ryabchenko[3], V. Kalita[3], M. Kulik[3], A. Lozenko[3], A. Vovk[4], M. Godinho[4], L. Maurel[5], J.A. Pardo[5], C. Magén[5] and V. Korenivski[2] *1. Institute of Magnetism, National Academy of Sciences of Ukraine, Kyiv, Ukraine; 2. Nanostructure Physics, Royal Institute of Technology, Stockholm, Sweden; 3. Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine; 4. BioISI– Biosystems & Integrative Sciences Institute, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal; 5. Instituto de Nanociencia de Aragón, Universidad de Zaragoza, Zaragoza, Spain*

**BQ-03**. **Magnetic properties of stoichiometric $Mn_2VAl$ Heusler alloy thin films.** *T. Tsuchiya*[1], R. Kobayashi[1], T. Kubota[1,2] and K. Takanashi[1,2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

**BQ-04**. **Crystallographic and magnetic properties of TiN buffered $Co_2FeAl$ thin films.** J. Ludwig[1], A. Niesen[1], *D. Meier*[1], J. Schmalhorst[1] and G. Reiss[1] *1. Department of Physics, Bielefeld University, Bielefeld, Germany*

**BQ-05**. **Design of highly-dispersive spin gapless semiconductors by containing rare-earth element in quaternary Heusler compounds.** *G. Xu*[1], E. Liu[1], Y. Gong[1], Z. Xu[1], F. Xu[1] and W. Wang[2] *1. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, China; 2. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**BQ-06**. **Significant Enhanced Anomalous Hall Resistivity by Structural Disorder in Heterogeneous Heusler Alloys $FeCr_{1-x}Co_xSi$.** B. Ding[1], Y. Du[1], Y. Wang[1], *Z. Hou*[1], E. Liu[1], W. Wang[1] and G. Wu[1] *1. Institute of Physics, Chinese Academy of Science, Beijing, China*

**BQ-07**. **Electrical Determination of Néel Transitions in Heusler Alloy Thin Films.** *J. Sinclair*[1], T. Huminiuc[1], T. Tsuchiya[2], T. Sugiyama[2], T. Kubota[2], K. Takanashi[2], K. O'Grady[1] and A. Hirohata[1] *1. Department of Physics & Electronics, University of York, York, United Kingdom; 2. Institute for Materials Research, Tohoku University, Sendai, Japan*

**BQ-08**. **Effect of Fe Substitution for Ti on the Structural, Magnetic and Electronic Band Properties of Half-metallic $Co_2TiSi$.** Y. Jin[1], *P.R. Kharel*[2], P. Lukashev[3], J. Waybright[2], I. Tutic[3], J. Herran[3], S. Valloppilly[4] and D.J. Sellmyer[4] *1. Physics and Astronomy, University of Nebraska Lincoln, Lincoln, NE; 2. Physics, South Dakota State University, Brookings, SD; 3. Department of Physics, University of Northern Iowa, Cedar Falls, IA; 4. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE*

**BQ-09**. **Substitution Effect and Magnetic Performance in Off-stoichiometric $Fe_2CrGa$ System.** *H. Zhang*[1], J. Chen[1], Y. Ming[1], E. Liu[2], Q. Lu[1], D. Zhang[1], W. Liu[1] and Q. Wu[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. Institute of Physics, Beijing, China*

**BQ-10**. **Understanding Interfacial Behavior with Out-of-Plane Magnetoresistance Measurements of Ferromagnetic/Non-Magnetic Bi-layer Thin Films.** *S.A. Azzawi*[1] *1. Physics, Durham University, Durham, United Kingdom*

**BQ-11**. **Robust spin-current injection in lateral spin valves with two-terminal $Co_2FeSi$ spin injectors.** *S. Oki*[1], T. Kurokawa[1], S. Honda[2], S. Yamada[1], T. Kanashima[1], H. Itoh[2] and K. Hamaya[1] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Pure and Applied Physics, Kansai University, Suita, Japan*

**BQ-12**. **Tunneling magnetoresistance in nanogranular $La_{1-x}Sr_xMnO_3$ (x=0.47).** *J. Hejtmanek*[1], Z. Jirak[1], O. Kaman[1] and S. Vratislav[2] *1. Institute of Physics of the ASCR, Prague, Czech Republic; 2. Faculty of Nuclear Sciences and Physical Engineering, CTU, Prague, Czech Republic*

**BQ-13**. **Spin Splitting of Monolayer $WTe_2$ on Top of $Fe_3O_4$(111).** Y. Song[1], Q. Zhang[1] and *W. Mi*[1] *1. Department of Applied Physics, Tianjin University, Tianjin, China*

**BQ-14**. **Magnetic properties of Ni films deposited on crystalline $Bi_2Se_3$ surface.** *T. Yoo*[1], A. Nasir[2], S. Bac[2], S. Choi[2], S. Lee[2], H. Lee[2], S. Lee[2], X. Liu[1] and J. Furdyna[1] *1. Physics Department, University of Notre Dame, Notre Dame, IN; 2. Physics department, Korea University, Seoul, The Republic of Korea*

**BQ-15**. **Magneto-Conductivity in OLEDs Blended with Magnetic Nanoparticles.** *R. Geng*[1], K. Stojak Repa[2], M. Phan[2] and T. Nguyen[1] *1. Physics and Astronomy, The University of Georgia, Athens, GA; 2. Department of Physics, University of South Florida, Tampa, FL*

## Session BR
# MAGNETOELECTRONIC MATERIALS AND TRANSPORT II (Poster Session)

Lars Bocklage, Chair
DESY, Hamburg, Germany

**BR-01**. **Hall effect and magnetoresistive study of Co/Ni multilayers.** *E.H. Krenkel*[1], J.M. Rizko[1], B.C. Cheng[1], P.D. Sparks[1], J.C. Eckert[1], S.K. Patel[2] and E.E. Fullerton[2] *1. Physics, Harvey Mudd College, Claremont, CA; 2. CMRR, UCSD, La Jolla, CA*

**BR-02**. **Different Angular Dependent Magnetoresistance in Single Crystalline Pt/Fe And Pt/Co Bilayers.** X. Xiao[1], J. Li[1], M. Jia[1], L. Sun[1], *C. Zhou*[1] and Y. Wu[1] *1. Department of Physics, State Key Laboratory of Surface Physics and Advanced Materials Laboratory, Center for Spintronic Devices and Applications, Fudan University, Shanghai, China*

**BR-03**. **Unusual magnetoresistance in Heusler compounds Antiferromagnet/Ferromagnet bilayers.** M. Matsushita[1], T. Hajiri[1], K. Ueda[1] and *H. Asano*[1] *1. Crystalline Materials Science, Nagoya University, Nagoya, Japan*

**BR-04**. **Investigation of Structural Magnetic, Electrical and Thermal Transport Properties of Sm Substituted Polycrystalline $La_{0.7-x}Sm_xBa_{0.3}MnO_3$ ($0 \leq X \leq 0.2$) Manganties.** *N. Gaur*[1] and A. Modi[1] *1. Physics, Barkatullah University, Bhopal, Madhya Pradesh, India*

**BR-05**. **Static and Dynamic Signatures of Anisotropic Electronic Phase Separation in $La_{2/3}Ca_{1/3}MnO_3$ Thin Films under Anisotropic Strain.** *L. Hu*[1], L. Yu[1], P. Xiong[1], L. Wang[3], W. Wu[3], X. Wang[2] and J. Zhao[2] *1. Florida State University, Tallahassee, FL; 2. Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China; 3. Hefei National Laboratory for Physical Science at Microscale, University of Science and Technology of China, Hefei, China*

**BR-06**. **Polarization-mediated perpendicular magnetic anisotropy in a $BiFeO_3/Al_2O_3$/Pt/Co/Pt multiferroic hybrid structure.** P.F. Liu[1], J. Miao[1], K. Meng[1], Y. Wu[1], X. Xu[1] and *Y. Jiang*[1] *1. School of Materials Science and Engineering, University of Science & Technology Beijing, Beijing, China*

**BR-07**. **Electrical and Magnetic Properties of DLC-Co Nano-composite Films by Hybrid Deposition Method.** *Y. Zhang*[1], H. Kosukegawa[1], H. Miki[1], N. Kobayashi[2], S. Ohnuma[1,2], T. Takagi[1] and H. Masumoto[1] *1. Tohoku University, Sendai, Japan; 2. Research Institute for Electromagnetic Materials, Sendai, Japan*

**BR-08**. **Large Room Temperature MR in Electrically-Modulated Magnetic Nano-structure.** *W. Xue*[1], G. Liu[1] and R. Li[1] *1. Magnetic Materials and Advanced Devices, Ningbo Institute of Industrial Technology, Chinese Academy of Sciences, Ningbo, China*

**BR-09**. **Electric and Magnetic Transport Characterization of Post-Growth Annealing Process of Co-C Grown by Focused-Electron-Beam-Induced Deposition.** M.V. Puydinger dos Santos[1,2], M. Velo[1], R.D. Domingos[1], Y. Zhang[3], X. Maeder[3], C. Guerra-Nunez[3], F. Béron[1], *K.R. Pirota*[1], S. Moshkalev[2], J.A. Diniz[2] and I. Utke[3] *1. Universidade Estadual de Campinas, Campinas, Brazil; 2. CCS, Universidade Estadual de Campinas, Campinas, Brazil; 3. Swiss Federal Laboratories for Material Science and Technology, Thun, Switzerland*

**BR-10**. **Tuning the linear anomalous Hall effect by the current induced spin-orbit torque.** *T. Zhu*[1] *1. State Key Lab for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**BR-11**. **Anisotropic Electronic States In The Fractional Quantum Hall Regime.** *O. Ciftja*[1] *1. Department of Physics, Prairie View A&M University, Prairie View, TX*

**BR-12**. **Topological Hall Effect of Skyrmions in Epitaxial Grown FeGe Thin Films.** *K. Meng*[1,2], J. Gallagher[2], J. Fuhrman[3], J. Brangham[2], H. Wang[4], B. Esser[1], D. McComb[1] and F. Yang[1] *1. The Ohio State University, Columbus, OH; 2. Physics, The Ohio State University, Columbus, OH; 3. The University of Alabama, Tuscaloosa, AL; 4. The Pennsylvania State University, University Park, PA*

**BR-13**. **Klein Tunneling Transport in Type-II Weyl Fermion under The Influence of Magnetic Field.** *C. Yesilyurt*[1], Z. Siu[1], S. Tan[2,1], G. Liang[1] and M.B. Jalil[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Data Storage Institute, Agency of Science, Technology and Research (A* Star), Singapore, Singapore*

**BR-14**. **Proximity-induced magnetoresistance in two-dimensional massless Dirac electrons on ferromagnetic insulators.** *T. Chiba*[1], S. Takahashi[1] and G.E. Bauer[1,2] *1. Institute for Materials Research (IMR), Tohoku University, Sendai, Japan; 2. Kavli Institute of NanoScience, Delft University of Technology, Delft, Netherlands*

**BR-15**. **Weak localization effect in $Bi_2Te_3$ nanoplates.** *S.W. Chen*[1], Z.L. Yang[1], W. Tao[1], D. Yang[1] and X.D. Sheng[1] *1. Lanzhou Univercity, Lanzhou, China*

## Session BS
# MAGNETORESISTANCE AND CRITICAL PHENOMENA (Poster Session)

Thomas Ambrose, Chair
Northrup Grumman Corporation, Linthicum, MD

**BS-01**. **Magnetoresistance and All-electrical Control Magnetization Coupling In a Molecular Junction.** *L. Tao*[1] and J. Wang[1] *1. Department of Physics, The University of Hong Kong, Hong Kong, Hong Kong*

**BS-02**. **Ferromagnetic GaMnP: magneto-transport properties and co-doping effect.** *S. Zhou*[1], C. Xu[1], Y. Yuan[2], M. Wang[1], H. Hentschel[1], R. Boettger[1] and M. Helm[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

**BS-03**. **Comparison of Laser Induced and Intrinsic Tunnel Magneto-Seebeck Effects.** T. Huebner[1], *A. Boehnke*[1], U. Martens[2], A. Thomas[3], J. Schmalhorst[1], G. Reiss[1], M. Münzenberg[2] and T. Kuschel[1,4] *1. Physics Department, Bielefeld University, Bielefeld, Germany; 2. Institute of Physics, Ernst-Moritz-Arndt University, Greifswald, Germany; 3. Institute for Metallic Materials, Leibniz Institute for Solid State and Materials Research Dresden (IFW Dresden), Dresden, Germany; 4. Zernike Institute for Advanced Materials, University of Groningen, Groningen, Netherlands*

**BS-04**. **Temperature Dependence of Tunneling Magnetoresistance in $GdO_x$ Based Magnetic Tunnel Junctions.** *T. Newhouse-Illige*[1], Y. Xu[1], C. Bi[1], M. Xu[1] and W. Wang[1] *1. Department of Physics, University of Arizona, Tucson, AZ*

**BS-05**. **High temperature stable bottom pinned perpendicular magnetic tunnel junctions.** *J. Wrona*[1], M. Zhu[2], J. Langer[1], S. Tibus[1], M. Smalley[2], S. Bennett[2] and B. Ocker[1] *1. Singulus Technologies AG, Kahl am Main, Germany; 2. Colleges of Nanoscale Science and Engineering, SUNY Polytechnic Institute, Albany, NY*

**BS-06**. **A compositional study of CoPd alloy pinned p-pMTJs for STT-RAM.** *B.D. Clark*[1], A. Natarajarathinam1[1], Z.R. Tadisina[1], J. Beik Mohammadi[1], T. Mewes[1], A.P. Chen[2], R. Shull[2] and S. Gupta[1] *1. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, AL; 2. National Institute of Standards and Technology, Gaithersburg, MD*

**BS-07**. **Tailoring the interfacial exchange coupling of perpendicularly magnetized Co/$L1_0$-$Mn_{1.5}Ga$ bilayers.** J. Xiao[1], J. Lu[1], W. Liu[2], H. Wang[1], L. Zhu[1], H. Deng[1], *D. Wei*[1], Y. Xu[2] and J. Zhao[1] *1. State Key Laboratory For Superlattices And Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China; 2. The University of York, York, United Kingdom*

**BS-08**. **Effect of Fermi arcs and inter-valley coupling on tunneling in a Dirac semimetal.** *Z. Siu*[1], C. Yesilyurt[1] and M.B. Jalil[1] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

**BS-09**. **Crystal structure and magnetic properties of $Li_{1-x}Na_xFePO_4$ Investigated with Mössbauer Spectroscopy.** *B. Ko*[1], H. Choi[1], T. Kouh[1] and C. Kim[1] *1. Department of Phsics, Kookmin University, Seoul, The Republic of Korea*

**BS-10**. **Pressure Induced Quantum Phase Transition in the Itinerant Ferromagnet UCoGa.** *M. Míšek*[1], P. Opletal[2], J. Kaštil[1], J. Kamarád[1] and V. Sechovsky[2] *1. Department of Magnetics and Superconductors, Institute of Physics, Academy of Sciences of the Czech Republic, Prague, Czech Republic; 2. Department of Condensed Matter Physics, Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic*

**BS-11**. **Co-site substitution effects on the simultaneous metal-insulator and spin-state transition in $(Pr_{1-y}Gd_y)_{1-x}Ca_xCoO_3$.** *T. Naito*[1], H. Fujishiro[1] and K. Nitta[2] *1. Iwate University, Morioka, Japan; 2. Japan Synchrotron Radiation Research Institute, Sayo, Japan*

**BS-12**. **Electron Spin Resonance of $Gd^{3+}$ Ions in $Gd_xY_{1-x}Ni_3Ga_9$ ($0.05 \leq x \leq 1.00$).** J.G. Duque[1,2], E.C. Mendonça[2], L.S. Silva[2], C.B. Jesus[1], *P. Pagliuso*[1] and R. Lora-Serrano[3] *1. DEQ, Instituto de Física Gleb Wataghin - Unicamp, Campinas, Brazil; 2. Physics, Programa de Pós-Graduação em Física, Campus Prof. José Aluísio de Campos, UFS, 49100-000 São Cristóvão, SE, Brazil, São Cristóvão, Brazil; 3. Physics, Universidade Federal de Uberlândia, 38408-100, Uberlândia, MG, Brazil, Uberlândia, Brazil*

**BS-13**. **Photo-excited enhancement of Cr charge-density-wave ordering by dynamic electron-phonon interaction.** *S.K. Patel*[1,2], A. Singer[2], R. Kukreja[1,2], V. Uhlir[1], J.C. Wingert[2], S. Festersen[3], D. Zhu[4], J.M. Glownia[4], H. Lemke[4], S. Nelson[4], K. Rossnagel[3], M. Bauer[3], B.M. Murphy[5,3], O.M. Magnussen[3,5], E.E. Fullerton[1] and O.G. Shpyrko[2] *1. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA; 2. Physics Department, University of California, San Diego, La Jolla, CA; 3. Institute for Experimental and Applied Physics, University of Kiel, Kiel, Germany; 4. LCLS, SLAC National Accelerator Laboratory, Menlo Park, CA; 5. Ruprecht Haensel Laboratory, University of Kiel, Kiel, Germany*

**BS-14**. **Finite-size scaling behavior of Néel temperature in magnetoelectric corundum $Cr_2O_3$ thinfilm.** *S. Pati*[1], M. Al-Mahdawi[1], S. Ye[1], Y. Shiokawa[1], T. Nozaki[1] and M. Sahashi[1,2] *1. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 2. ImPACT Program, Japan Science and Technology Agency, Tokyo, Japan*

**BS-15**. **Evolution from 4f-electron antiferromagnetic to ferromagnetic order in the CeCu($Ge_{1-x}Sn_x$) alloy series (0 ≤$x$≤ 1).** *B.M. Sondezi*[1], A. Altayeb[3,1], M.B. Tchoula Tchokonte[2], A. Strydom[1] and D. Kaczorowski[4] *1. Physics, University of Johannesburg, Johannesburg, South Africa; 2. Physics, University of the Western Cape, Bellville, South Africa; 3. Physics, University of the Western Cape, Bellville, South Africa; 4. Magnetic, Institute of Low Temperature and Structure Research, Polish Academy of Sciences, Wroclaw, Poland*

**BS-16**. **Magnetic Ground State At The Dysprosium Site in $DyNiAl_4$.** W.D. Hutchison[1], G.A. Stewart[1], S. Cadogan[1] and *D. Ryan*[2] *1. School of Physical, Environmental and Mathematical Sciences, University of New South Wales, Canberra, ACT, Australia; 2. Centre for the Physics of Materials and Physics Department, McGill University, Montreal, QC, Canada*

TUESDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session BT
# NON-RARE-EARTH MAGNETS (Poster Session)

Wenyong Zhang, Chair
University of Nebraska, Lincoln, NE

**BT-01**. **Magnetic properties of $Nd(Fe_{1-x}Co_x)_{10.5}M_{1.5}$ (M=Mo and V, $x$=0-1) and their nitrides.** J. Fu[1], W. Yang[1], Y. Xia[1] and *J. Yang*[1] *1. School of Physics, Peking University, Beijing, China*

**BT-02**. **Large Magnetocrystalline Anisotropy in $AlFe_2B_2$ Single Crystals.** *B. Lejeune*[1], G. Hadjipanayis[2] and L. Lewis[1] *1. Chemical Engineering, Northeastern Univeristy, Boston, MA; 2. Physics and Astronomy, University of Delaware, Newark, DE*

**BT-03**. **Characterization of Mo-substituted Co-ferrite Thin Films Prepared by Metal-organic Decomposition Method.** *T. Ishibashi*[1], T. Ikari[1], A. Meguro[1], H. Yanagihara[2] and E. Kita[2] *1. Department of Materials Science & Technology, Nagaoka University of Technology, Niigata, Japan; 2. Institute of Applied Physics, University of Tsukuba, Tsukuba, Japan*

**BT-04**. **Irreversible Magnetization Process and Switching Mechanism in $L1_0$ FePt thin films.** *A. Lisfi*[1], S. Pokharel[1], O. Akioya[1], N. Alqhtany[1] and M. Wuttig[2] *1. Physics, Morgan State University, Baltimore, MD; 2. Materials Science and Engineering, University of Maryland at College Park, College Park, MD*

**BT-05**. **Study of exchange coupling in MnAlC/α-Fe nanocomposite magnets prepared by cryogenic milling.** *J.S. Trujillo Hernandez*[1,2], L. Marshall[3,4], I. McDonald[3,4], L. Lewis[3,4] and G.A. Pérez Alcázar[1] *1. Department of Physics, Universidad del Valle, Cali, Colombia; 2. Faculty of Natural Sciences and Mathematics, Universidad de Ibagué, Ibagué, Colombia; 3. Department of Chemical Engineering, Northeastern University, Boston, MA; 4. Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA*

**BT-06**. **Rare-earth (RE:Tb and Dy) Doped $SrFe_{12-x}RE_xO_{19}$: Magnetic and XPS Study.** *M. Ghimire*[1], F. Perez[2], L. Wang[3], H. Adhikari[1] and S.R. Mishra[1] *1. Department of Physics and Materials Science, The University of Memphis, Memphis, TN; 2. Integrated Microscopy Center, The University of Memphis, Memphis, TN; 3. Department of Electrical Engineering, University of Memphis, Memphis, TN*

**BT-07**. **Struture and Magnetic Properties of $Mn_{51-x}Fe_xBi_{49}$(x=0, 3, 6, 9) Compounds.** *D. Zhang*[1], P. Wang[1], M. Yue[1], J. Li[1], Q. Lu[1] and W. Liu[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China*

**BT-08**. **α”-$Fe_{16}N_2$ powders prepared by high energy ball milling method.** *J. Liu*[1], B. Ma[1], Y. Jiang[1] and J. Wang[1] *1. Electrical and Computer Engineering, University of Minnesota, Twin Cities, Minneapolis, MN*

**BT-09**. **Search for Rare-Earth Free Permanent Magnets in Cobalt Nitrides by Adaptive Genetic Algorithm.** X. Zhao[1], *C. Wang*[1], L. Ke[2] and K. Ho[1] *1. Ames Laborotory and Department of Physics, Iowa State University, Ames, IA; 2. Ames Laboratory, Ames, IA*

**BT-10**. **Effect of Mo on microstructure and thermal stability for Alnico 8 alloys.** *J. Zhao*[1] and Y. Sun[1] *1. Magnetic Department, Ningbo Institute of Material Technology and Engineering, Ningbo, China*

**BT-11**. **Magnetic Anisotropy in spherical $Fe_{16}N_2$ core-shell nanoparticles determined by torque measurements.** *E. Kita*[1,2], Y. Sasaki[3], M. Kishimoto[1] and H. Yanagihara[1] *1. Institute of Applied Physics, University of Tsukuba, Tsukuba, Japan; 2. NIT, Ibaraki College, Hitachinaka, Japan; 3. Hitachi Maxell, Oyamazaki, Japan*

**BT-12**. **Morphology control of hexagonal strontium ferrite micro/nano-particles.** D. Chen[1,2], Y. Meng[1], D. Zeng[1], H. Yu[1] and *P. Liu*[3] *1. South China University of Technology, Guangzhou, China; 2. South China Normal University, Guangzhou, China; 3. University of Texas at Arlington, Arlington, TX*

**BT-13**. **Large Magnetic Anisotropy in HfMnP.** T. Lamichhane[3,1], V. Taufour[3], M. Masters[1], S. Thimmaiah[3], S. Bud’ko[3,1], *D. Parker*[2] and P.C. Canfield[1,3] *1. Physics, Iowa State University, Ames, IA; 2. ORNL, Oak Ridge, TN; 3. Ames Lab, Ames, IA*

**BT-14**. **Single nanometer-size hard magnetic ferrite based on ε-$Fe_2O_3$.** *S. Ohkoshi*[1] *1. The University of Tokyo, Tokyo, Japan*

**BT-15**. **Role of nanostructural non-uniformity on alnico magnetic properties.** *L. Ke*[1], R. Skomski[2], C. Wang[1], T. Hoffmann[3], L. Zhou[1], I.E. Anderson[1] and M.J. Kramer[1] *1. Ames Laboratory, Ames, IA; 2. Physics and Astronomy, University of Nebraska - Lincoln, Lincoln, NE; 3. 1137 W Emerald Ave, Mesa, AZ*

**BT-16**. **Magnetocrystalline Anisotropy of $Mn_xGa$: A first-principles Study.** X. Liu[1], *D. Ryan*[2], M. Wang[3], Q. Lu[3], H. Zhang[3], Y. Ming[4] and Z. Altounian[2] *1. Physics Department, McGill University, Montreal, QC, Canada; 2. McGill University, Montreal, QC, Canada; 3. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 4. Beijing University of Technology, Beijing, China*

TUESDAY AFTERNOON 2:30 | GRAND BALLROOM

## Session BU
# PERMANENT MAGNET SYNTHESIS AND PROCESSING I (Poster Session)

Ming Yue, Chair
Beijing University of Technology, Beijing, China

**BU-01**. **Directly obtained τ-MnAl phase with high magnetization using melt rapid-hardening method.** Z. Shao[1], Z. Hui[1], W. Yang[1], J. Zeng[2], S. Guo[2], H. Du[1], C. Wang[1], Y. Yang[1] and *J. Yang*[1] *1. School of Physics, Peking University, Beijing, China; 2. Rare Earth Magnetic Materials Laboratory, Ningbo Institute of Materials Technology and Engineerig, Chinese Academy of Sciences, Ningbo, China*

**BU-02**. **Microstructure evolution and coercivity enhancement in Nd-Fe-B thin films diffusion-processed by R-Al alloys (R=Nd, Pr).** C. Weibin[1,2], H. Zhong[1,2], Y. Fu[1,2], Q. Wang[1], *K. Lokendra*[3] and Y. Qiang[3] *1. Key Laboratory of Electromagnetic Processing of Materials (Ministry of Education), Northeastern University, Shenyang, China; 2. Department of Physics and Chemistry of Materials, Northeastern University, Shenyang, China; 3. Physics Department, University of Idaho, Moscow, ID*

**BU-03**. **Micromagnetic Simulation of the Influence of Grain Boundary Phase on Ce Substituted Nd-Fe-B Magnets.** *D. Liu*[1], T. Zhao[1], J. Lu[1], J. Sun[1], M. Zhang[1], R. Shang[1], R. Li[1], J. Xiong[1], X. Zhao[1], J. Zhang[1] and B. Shen[1] *1. State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**BU-04**. **Enhanced Performances of Electroplated Hard Magnet Layers Via a Texture Inducing Underlayer.** *C. Tseng*[1], C. Hsiao[1], L. Tsai[2], J. Chang[2], C. Sung[2] and T. Chin[1] *1. Material Science and Engineering, Feng Chia Uneverisity, Taichung City, Taiwan; 2. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan*

**BU-05**. **Magnetic Domain Observation on Demagnetization of Nd–Fe–B Sintered Magnets under Compressive Stress and Elevated Temperatures.** *M. Takezawa*[1], K. Fukushima[1], Y. Morimoto[1] and Y. Nakano[2] *1. Kyushu Institute of Technology, Kitakyushu, Japan; 2. Mitsubishi Electric Corporation, Amagasaki, Japan*

**BU-06**. **Magnetization reversal process in (Sm, Dy, Gd) (Co, Fe, Cu, Zr)$_z$ magnets with different cellular structure.** *L. Liu*[1], Z. Liu[1], M. Li[1], C. Wang[1], F. Yanping[1], X. Zhang[1], D. Lee[1] and A. Yan[1] *1. Ningbo Institute of Material Technology and Engineering, CAS, Ningbo, China*

**BU-07**. **The magnetic properties of textured $MMCo_5$ (MM=Mischmetal)nanoflakes prepared by multistep (three steps) surfactant-assisted ball milling.** *X. Zhao*[1], W. Zuo[1], D. Liu[1], J. Xiong[1], R. Shang[1], T. Zhao[1], J. Zhang[1], J. Sun[1] and B. Shen[1] *1. State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**BU-08**. **Characterizations of magnetic phase transitions in $PrMn_2Ge_2$ compounds investigated by magnetization and magnetic hyperfine field measurements.** *B. Bosch-Santos*[1], A.W. Carbonari[1], G. Cabrera-Pasca[1] and R.S. Freitas[2] *1. Instituto de Pesquisas Energéticas e Nucleares (IPEN/USP), São Paulo, Brazil; 2. Instituto de Física, Universidade de São Paulo (IFUSP), São Paulo, Brazil*

**BU-09**. **Effects of doping on the magnetic properties of La-Ce misch-metal based $(La,Ce)_2Fe_{14}B$ melt spun ribbons: 2:14:B phases for cost effective permanent magnets.** S. Fabbrici[1,2], A. Gabay[3], R. Cabassi[2], F. Albertini[2], E. Agostinelli[1] and *G. Hadjipanayis*[3] *1. ISM-CNR, Rome, Italy; 2. IMEM-CNR, Parma, Italy; 3. Physics and Astronomy, University of Delaware, Newark, DE*

**BU-10**. **Controlling the microstructure and associated magnetic properties of $Ni_{0.2}Mn_{3.2}Ga_{0.6}$ melt spun ribbons by annealing.** *M.U. Khan*[1], O.F. Alshammari[1], B. Balasubramanian[2], B. Das[2], D.J. Sellmyer[2], A. Us Saleheen[3] and S. Stadler[3] *1. Physics, Miami University, Oxford, OH; 2. Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE; 3. Physics & Astronomy, Louisiana State University, Baton Rouge, LA*

**BU-11**. **Magnetic properties of Sm-Fe-N bulk magnets prepared from Cu-plated Sm-Fe-N powder.** *T. Saito*[1], T. Deguchi[2] and H. Yamamoto[2] *1. Chiba Institute of Technology, Chiba, Japan; 2. KRI, Kyoto, Japan*

**BU-12**. **Texture And Magnetism In Nanocrystalline $(SmCo_5)_{0.6}(PrCo_5)_{0.4}$ Permanent Magnets.** *X. Xu*[1], H. Zhang[1], M. Yue[1], Q. Lu[1], D. Zhang[1], W. Liu[1] and Q. Wu[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China*

**BU-13**. **Microstructure and Magnetic Properties of Hot Deformed $Pr_2(Fe,Co)_{14}B/PrCo_5$ Hybrid Magnet Doped by PrCu Alloy.** *D. Zhou*[1], D. Zhang[1], Y. Ming[1], Q. Lu[1], W. Liu[1] and J. Zhang[1] *1. College of Materials Science and Engineering, Beijing University of Technology, BeiJing, China*

**BU-14**. **Revealing on Metallurgical Behavior of Iron-rich $Sm(Co_{0.65}Fe_{0.26}Cu_{0.07}Zr_{0.02})_{7.8}$ Sintered Magnets.** *K. Song*[1], W. Sun[1], H. Chen[1], N. Yu[1], Y. Fang[1], M. Zhu[1] and W. Li[1] *1. Division of Functional Materials, Central Iron and Steel Research Institute, China, Beijing, China*

**BU-15**. **Cold Plasma Cleaning of Magnetic Nanoparticle Surface with Optimized Pulse Processing.** *N. Poudyal*[1], G. Han[1], Z. Qiu[1], K. Elkins[1], J. Mohapatra[1], K.H. Gandha[1], R. Timmons[2] and P. Liu[1] *1. Department of Physics, University of Texas at Arlington, Arlington, TX; 2. Department of Chemistry and Biochemistry, University of Texas at Arlington, Arlington, TX*

**BU-16**. **Double shifted hysteresis loops in ferrimagnetic heterostructures.** *B. Hebler*[1], O. Hellwig[2] and M. Albrecht[1] *1. Experimentalphysik IV, University Augsburg, Augsburg, Germany; 2. Western Digital Company, San Jose, CA*

TUESDAY
AFTERNOON
2:30

GRAND BALLROOM

## Session BV
## PERMANENT MAGNET SYNTHESIS AND PROCESSING II (Poster Session)

A-Ru Yan, Chair
NIMTE, Ningbo, China

**BV-01**. **The microstructure and magnetic properties of La doped Pr-Fe-B magnet.** *Y. Li*[1], M. Zhang[2], K. Wu[1], B. Shen[2] and J. Sun[2] *1. Faculty of Science, Wuhan University of Science and Technology, Wuhan, China; 2. State Key Laboratory for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**BV-02**. **Variation of coercivity with Ce content in $(PrNdCe)_2Fe_{14}B$ sintered magnets.** X. Zhang[1], L. Zhang[1], *Z. Li*[1], J. Lan[1], Y. Liu[1], Q. Ma[1], Y. Li[1] and Q. Zhao[1] *1. Key Laboratory of Integrated Exploitation of Bayan Obo Multi-Metal Resources, Inner Mongolia University of Science and Technology, Baotou, China*

**BV-03**. **Production of $Sm_5Fe_{17}$ magnets by spark plasma sintering method.** *Y. Sajima*[1], T. Horita[1] and T. Saito[1] *1. Chiba Institute of Technology, Chiba, Japan*

**BV-04**. **Coercivity of Nd-Fe-B hot-deformed magnets prepared by the spark plasma sintering method.** T. Saito[1], S. Nozaki[1] and *Y. Sajima*[1] *1. Chiba Institute of Technology, Chiba, Japan*

**BV-05**. **Structure and Properties of Sintered MM–Fe–B Magnets.** *R. Shang*[1], J. Xiong[1], R. Li[1], W. Zuo[1], J. Zhang[1], T. Zhao[1], R. Chen[2], B. Shen[1] and J. Sun[1] *1. State Key Laboratory for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China*

**BV-06**. **Magnetic Properties Of (Misch-metal, Nd)-Fe-B Melt Spun Magnets.** *R. Li*[1], R. Shang[1], J. Xiong[1], D. Liu[1], H. Kuang[1], W. Zuo[1], T. Zhao[1], J. Sun[1] and B. Shen[1] *1. State Key Laboratory for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**BV-07**. **Magnetic properties of microfabricated Nd-Fe-B thin films with grid pattern.** *A. Sugawara*[1], R. Kurosu[1], H. Iwama[1], M. Doi[1] and T. Shima[1] *1. Faculty of Engineering, Tohoku Gakuin University, Tagajo, Japan*

**BV-08**. **Enhancement in $(BH)_{max}$ of PLD-made isotropic Nd-Fe-B thick film magnets deposited on Si substrates.** *Y. Chikuba*[1], D. Shimizu[1], A. Yamashita[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

**BV-09**. **Thermal activation analysis on Nd-Fe-B hot-deformed magnets with Pr-Cu grain boundary diffusion process.** *L. Zhang*[1], S. Okamoto[6], T. Yomogita[6], N. Kikuchi[3], O. Kitakami[6], H. Sepehri-Amin[5], T. Ohkubo[4], K. Hono[4], T. Akiya[2] and K. Hioki[2] *1. Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan; 2. Daido Steel Co., Ltd, Daido-cho, Japan; 3. IMRAM Tohoku University, Sendai, Japan; 4. Magnetic Materials Unit, NIMS, Tsukuba, Japan; 5. NIMS, Japan, Tsukuba, Japan; 6. IMRAM, Tohoku University, Sendai, Japan*

**BV-10**. **Hot-pressed graphene/$Nd_2Fe_{14}B$ composite magnets with improved thermal and mechanical properties.** *L. Zheng*[1,2], Y. Sun[1], M. Zhu[1] and W. Li[1] *1. Central Iron & Steel Research Institute, Beijing, China; 2. Hebei University of Engineering, Handan, China*

**BV-11**. **Grain Boundary Diffusion of Different Rare Earth Elements in Nd-Fe-B Sintered Magnets by Experiment and FEM Simulation.** *K. Loewe*[1], D. Benke[1], M. Duerrschnabel[1], L. Molina-Luna[1], K.P. Skokov[1] and O. Gutfleisch[1] *1. Department of Material- and Geosciences, TU Darmstadt, Darmstadt, Germany*

**BV-12**. **Microstructural analysis of anisotropic α-Fe/Nd-Fe-B exchange-spring magnets produced by high pressure crystallization.** *Z. Turgut*[1], R. Wheeler[1,2], Y. Shen[1,3], J. Horwath[1] and L. Semiatin[1] *1. Air Force Research Laboratory, Wright-Patterson AFB, OH; 2. UES Inc., Dayton, OH; 3. University of Dayton, Dayton, OH*

**BV-13**. **Characterization of bulk anisotropic nanocrystalline $RCo_5$ (R=Sm, Pr) permanent magnets.** *Y. Ming*[1], D. Zhang[1] and W. Liu[1] *1. Beijing University of Technology, Beijing, China*

**BV-14**. **Nitrogenation process of $Sm_2Fe_{17}N_X$ in mixed-gas of $NH_3$ and $H_2$.** *N. Imaoka*[1,2], K. Ozaki[1] and T. Iriyama[3] *1. Advanced Industrial Science and Technology (AIST), Nagoya, Japan; 2. Asahi Kasei Corporation, Fuji, Japan; 3. Daido Steel Co., Ltd., Nagoya, Japan*

**BV-15**. **Strain Effect on FeN Bulk Magnet Introduced by 9 T High Field Annealing.** *Y. Jiang*[1], M. Brady[3], O. Rios[3] and J. Wang[2] *1. MINT center, Minneapolis, MN; 2. Electrical and Computer Engineering, School of Physics & Astronomy, Minneapolis, MN; 3. Oak Ridge National Laboratory, Oak Ridge, TN*

**BV-16**. **Texture Development Mechanism during Desorption-Recombination in HDDR Processed Nd-Fe-B Magnet.** *T. Kim*[1], J. Lee[2], H. Kwon[3] and C. Yang[1] *1. School of Advanced Materials Science and Engineering, Sungkyunkwan University, Suwon, The Republic of Korea; 2. Powder & Ceramics Division, Korea Institute of Materials Science, Changwon, The Republic of Korea; 3. Department of Materials Science and Engineering, Pukyong National University, Busan, The Republic of Korea*

TUESDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session BW
# COMPLEX OXIDES I: FILMS AND NEW MAGNETIC MATERIALS (Poster Session)

Liang-Jian Zou, Chair
Institute of Solid State Physics, Chinese Academy of Sciences, Hefei, China

**BW-01**. **A novel structural expansion in $SrTiO_3$ substrate tuned by electric field and visible-light.** *Y. Li*[1], S. Peng[1], T. Mao[1], D. Wang[1], K. Wu[1] and J. Sun[2] *1. Faculty of Science, Wuhan University of Science and Technology, Wuhan, China; 2. State key laboratory for Magnetism, Chinese Academy of Sciences, Institute of Physics, Beijing, China*

**BW-02**. **Enhancement in β-phase and Energy Harvesting Capability of PVDF Films Embedded with Room Temperature Ferromagnetic $Gd_5Si_4$ Nanoparticles.** *N.M. D'Souza*[1], S. Harstad[1], N. Soin[2], S. Gupta[3], V.K. Pecharsky[3], T. Shah[2], E. Siores[2] and R. Hadimani[1] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA; 2. Institute of Renewable Energy & Environment Technology, University of Bolton, Bolton, United Kingdom; 3. Division of Materials Science and Engineering, Ames Laboratory, Ames, IA*

**BW-03**. **Point Defects in MgO Single Crystal Induced by $^{60}Co$ γ-ray and Neutron Irradiation.** M. Cao[1], Y. Ma[1], X. Wang[1], C. Ma[1], W. Zhou[1], X. Wang[1], W. Tan[1] and *J. Du*[2] *1. Nanjing University of Science and Technology, Nanjing, China; 2. Physics, Nanjing Unversity, Nanjing, China*

**BW-04**. **$Ag_3PO_4$ nanoparticle-decorated Ni/C nanocapsules with tunable electromagnetic properties.** C. Cui[1,2], P. Zhou[1,2], *X. Liu*[1,2] and S. Or[2] *1. School of Materials Science and Engineering, Anhui University of Technology, Maanshan, China; 2. Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong*

**BW-05**. **Unsaturated Magnetoconductance of Epitaxial $La_{0.7}Sr_{0.3}MnO_3$ Thin Films in Pulsed Magnetic Fields up to 60 T.** W. Niu[1], *X. Wang*[1], Y. Xu[1] and R. Zhang[1] *1. Nanjing University, Nanjing, China*

**BW-06**. **Rectifying characteristics, photoelectric properties and magnetoresistance in heterojunctions composed of $La_{0.9}Hf_{0.1}MnO_3$/0.05%Nb-doped $SrTiO_3$.** *Y. Qi*[1], J. Gao[1] and L. Wang[2] *1. Physics, The University of Hong Kong, Hong Kong, Hong Kong; 2. School of Materials Science and Engineering, Shanghai University, Shanghai, China*

**BW-07**. **Study of the Metastable State of $La_xHf_{1-x}MnO_3$ using Scanning Tunneling Microscopy.** *J. Zeng*[1] and J. Gao[1] *1. Physics, The University of Hong Kong, Hong Kong, Hong Kong*

**BW-08**. **Abnormal Enhancement of Ferromagnetism for thin $LaMnO_{3+\delta}$ films with decreasing oxygen pressure.** *A. Zhang*[1], W. Zhang[1], J. Lin[3] and X. Wu[2] *1. College of Science, Hohai University, Nanjing, China; 2. Nanjing University, Nanjing, China; 3. Taiwan University, Taipei, Taiwan*

**BW-09**. **Elecrtic Field Control of the Small-polaron Hopping Conduction in $Pr_{0.7}(Ca_{0.6}Sr_{0.4})_{0.3}MnO_3$ /PMN-PT Heterostructure.** H. Kuang[1], *J. Wang*[1], Y. Zhao[1], Y. Liu[1], F. Hu[1], J. Sun[1] and B. Shen[1] *1. State Key Laboratory of Magnetism, Institute of Physics, University of Chinese Academy of Sciences, Chinese Academy of Sciences, Beijing, China*

**BW-10**. **Novel temperature dependent photoelectronic behaviors of ultrathin films manganite-based junctions.** *L.H. Huang*[1,2] *1. Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. College of Science, Wuhan University of Science and Technology, Wuhan, China*

**BW-11**. **Thermodynamic Stability and Control of Oxygen Reactivity at Functional Oxide Interfaces: EuO on ITO.** *T. Gerber*[1], P. Lömker[1], B. Zijlstra[1], C. Besson[2,3], D.N. Mueller[1], W. Zander[4], J. Schubert[4], M. Gorgoi[5] and M. Müller[1] *1. Peter Grünberg Institute, PGI-6, Research Center Jülich, Jülich, Germany; 2. Institute of Inorganic Chemistry, RWTH Aachen University, Aachen, Germany; 3. Department of Chemistry, George Washington University, Washington, DC; 4. Peter Grünberg Institute, PGI-9, Research Center Jülich, Jülich, Germany; 5. Helmholtz Center Berlin, Berlin, Germany*

**BW-12**. **Strain Effect on Electronic Structure in $La_{2/3}Sr_{1/3}MnO_3$/ $BiFeO_3$ Bilayers.** *L. Yin*[1] and W. Mi[1] *1. Department of Applied Physics, Tianjin University, Tianjin, China*

**BW-13**. **Spin-Orbit Induced Anisotropy in the Magnetoconductance of the Two-Dimensional Electron System in α-$Al_2O_3$-$SrTiO_3$ Heterostructures.** *D. Fuchs*[1], K. Wolff[1], R. Schäfer[1], R. Schneider[1] and H. von Löhneysen[1] *1. Institute for Solid State Physics, Karlsruhe Institute of Technology, Eggenstein-Leopoldshafen, Germany*

**BW-14**. **Magnetoelectric properties and ferromagnetic resonance linewidth of $Pb(Zr_{0.5}Ti_{0.5})O_3/BaFe_{12}O_{19}$ multiferroic heterostructures.** *D. Chen*[1], Y. Li[3,2], H. Zhang[4,2] and G. Wang[1] *1. College of Materials and Chemical Engineering, Hainan University, Haikou, China; 2. School of Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, China; 3. State Key Lab of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; 4. University of Electronic Science and Technology of China, Chengdu, China*

**BW-15**. ***Enhanced Magnetization in Pulsed Laser Deposited Nano-Crystalline Gallium ferrite thin films.*** *H. Roy Dakua*[1,3], R. Mahendiran[3], N. Venkataramani[2] and S. Prasad[1] *1. Physics, Indian Institute of Technology Bombay, Mumbai, India; 2. Department of Metallurgical Engineering & Materials Science, Indian Institute of Technology Bombay, Mumbai, India; 3. Physics Dept, National University of Singapore, Singapore*

WEDNESDAY MORNING 8:30 — MARDI GRAS A-E

## Session CA

# SYMPOSIUM: NEW DEVELOPMENTS IN NANOSCALE SENSING WITH NITROGEN-VACANCY CENTER MAGNETOMETRY

André Thiaville, Chair
Universite Paris-Sud, Orsay, France

**8:30**

**CA-01**. **Imaging magnetism at the nanoscale with a single spin microscope.** ***(Invited)*** *V. Jacques*[1] *1. Laboratoire Charles Coulomb, CNRS and Université de Montpellier, Montpellier, France*

**9:06**

**CA-02**. **Magneto-optical imaging of thin magnetic films using spins in diamond.** ***(Invited)*** *D.A. Simpson*[1,3], J. Tetienne[1], J. McCoey[1], K. Ganesan[1], L. Hall[1], S. Petrou[4], R. Scholten[1] and L. Hollenberg[1,3] *1. Physics, University of Melbourne, Parkville, VIC, Australia; 3. Centre for Neural Engineering, University of Melbourne, Parkville, VIC, Australia; 4. Florey Neuroscience Institute, University of Melbourne, Parkvile, VIC, Australia*

**9:42**

**CA-03**. **Detecting magnetic fields from nuclear spins using nitrogen-vacancy centers in diamond.** ***(Invited)*** *D. Rugar*[1], J. Mamin[1] and M. Sherwood[1] *1. IBM Almaden Research Center, San Jose, CA*

**10:18**

**CA-04**. **Nanoscale Magnetic Imaging With A Single-Spin Based Quantum Sensor.** ***(Invited)*** *P. Maletinsky*[1] *1. Physics, University of Basel, Basel, Switzerland*

**10:54**

**CA-05**. **Nanoscale measurement of magnetic field with high dynamic range.** ***(Invited)*** *J. Wrachtrup*[1] *1. Physics, University of Stuttgart, Stuttgart, Germany*

WEDNESDAY MORNING 8:30 | MARDI GRAS F-H

## Session CB
# MAGNONICS I
Yan Zhou, Chair
University of Hong Kong, Hong Kong

**8:30**

**CB-01**. **Propagating spin waves with sub-100 nm wavelength in nanostructured magnetic thin film.** ***(Invited)*** *H. Yu*[1,3], O. D'Allivy Kelly[2], V. Cros[2], R. Bernard[2], P. Bortolotti[2], A. Anane[2], F. Brandl[3], F. Heimbach[3] and D. Grundler[4] *1. Fert Beijing Research Institute, School of Electronic and Information Engineering, Beihang University, Beijing, China; 2. Unite Mixte de Physique, CNRS, Thales, Univ Paris- Sud, Universite, Paris-Saclay, Palaiseau, France; 3. Physics Department, Technische Universitaet Muenchen, Garching b. Muenchen, Germany; 4. Laboratory of Nanoscale Magnetic Materials and Magnonics, Institute of Materials, School of Engineering, Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland*

**9:06**

**CB-02**. **Characterization of spin wave propagation in YIG micro-fabricated waveguides.** *M. Collet*[1], O. Gladii[3], M. Evelt[2], P. Bortolotti[1], V. Cros[1], S. Demokritov[2], Y. Henry[3], M. Bailleul[3], V.E. Demidov[2] and A. Anane[1] *1. Unité Mixte de Physique CNRS/Thales and Université Paris Sud, Palaiseau, France; 2. Institute for Applied Physics, University of Muenster, Muenster, Germany; 3. Institut de Physique et Chimie des Matériaux de Strasbourg, Strasbourg, France*

**9:18**

**CB-03**. **Propagation Of Confined Spin-Wave Modes In Sub-Micron Sized CoFeB Waveguides.** *F. Ciubotaru*[1,2], C. Adelmann[1], T. Fischer[3,4], A. Chumak[3], M. Manfrini[1], P. Pirro[3], T. Devolder[5], B. Hillebrands[3] and I.P. Radu[1] *1. imec, Leuven, Belgium; 2. Departement Electrotechniek (ESAT), KU Leuven, Leuven, Belgium; 3. Department of Physics and Landesforschungszentrum OPTIMAS, University of Kaiserslautern, Kaiserslautern, Germany; 4. MAINZ Graduate School of Excellence, Mainz, Germany; 5. University Paris-Sud, Orsay, France*

**9:30**

**CB-04**. **Magnetic domain walls as reconfigurable spin-wave nanochannels.** ***(Invited)*** K. Wagner[1,2], A. Kakay[1], K. Schultheiss[1], A. Henschke[1], T. Sebastian[1] and *H. Schultheiss*[1,2] *1. Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. TU Dresden, Dresden, Germany*

**10:06**

**CB-05**. **Spin wave energy distribution and the formation of bandgaps in a magnonic crystal.** *C.L. Ordóñez-Romero*[1], Z. Lazcano-Ortiz[1], C. Rodriguez-Reyes[1], M. Aguilar-Huerta[1], J. Donlucas-Perez[1], M.O. Vigueras-Zuniga[2], N. Qureshi[3], O. Kolokoltsev[3] and G. Monsivais[1] *1. Solid State, Physics Institute, UNAM., Mexico City, Mexico; 2. Facultad de Ingenieria, Universidad de Veracruz, Boca del Rio, Mexico; 3. CCADET, UNAM, Ciudad de Mexico, Mexico*

**10:18**

**CB-06**. **Spin Wave Dynamics in Periodically Modulated One Dimensional Magnonic Crystals.** *S. Khanal*[1] and L. Spinu[1] *1. AMRI, University of New Orleans, New Orleans, LA*

**10:30**

**CB-07**. **Dynamically Switchable Signal Splitting In 2D Magnonic Microchips By Locally Controlled Spin-wave Caustics.** *F. Heussner*[1], P. Pirro[1], A.A. Serga[1] and B. Hillebrands[1] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, 67663 Kaiserslautern, Germany*

**10:42**

**CB-08**. **Spin-texture-based control of spin waves in patterned magnetic microstrips.** *K. Buchanan*[1], G.A. Riley[1] and M.A. Asmat-Uceda[1] *1. Physics, Colorado State University, Fort Collins, CO*

**10:54**

**CB-09**. **Spin Wave Quantization in Ferromagnetic Nanostripes with Width Down to 50 nm.** *S. Saha*[1,4], S. Barman[2], Y. Otani[3,6] and A. Barman[2] *1. Laboratory for Mesoscopic Systems, Department of Materials, ETH Zurich, Zurich, Switzerland; 2. Department of Condensed Matter Physics and Material Sciences, S. N. Bose National Centre for Basic Sciences, Kolkata, India; 3. ISSP, University of Tokyo, Kashiwa, Japan; 4. Laboratory for Micro- and Nanotechnology, Paul Scherrer Institute, Villigen, Switzerland; 6. RIKEN-CEMS, Wako, Japan*

**11:06**

**CB-10**. **Thickness Dependence of the Normal Modes in Artificial Square Spin Ice.** *Y. Li*[1], G. Gubbiotti[2], S. Morley[3], F. Goncalves[1], M. Rosamond[4], E. Linfield[4], C.H. Marrows[3], S. McVitie[1] and R. Stamps[1] *1. Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 2. Dipartimento di Fisica e Geologia, Istituto Officina dei Materiali del Consiglio Nazionale delle Ricerche, Perugia, Italy; 3. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 4. School of Electronic and Electrical Engineering, University of Leeds, Leeds, United Kingdom*

**11:18**

**CB-11**. **Towards Magnonic Architectures in Circuit QED.** *A.D. Karenowska*[1], A.F. Van Loo[1], R.G. Morris[1] and S. Kosen[1] *1. Physics, University of Oxford, Oxford, United Kingdom*

WEDNESDAY
MORNING
8:30

LA GALERIES 1-2

### Session CC

## SPIN-ORBIT TORQUE AND SPIN-TRANSFER TORQUE

Alice Mizrahi, Chair
Unité Mixte CNRS/Thales, Bourg la Reine, France

**8:30**

**CC-01**. **Field-free switching of perpendicular magnetization using spin-orbit torque and exchange bias of antiferromagnet.** ***(Invited)*** S.C. Baek[1], Y. Oh[1], C. Yang[2,3], E. Park[3,4], K. Lee[2], K. Kim[5,6], G. Go[2], J. Jeong[7], B. Min[3], H. Lee[5], K. Lee[2] and *B. Park*[1] *1. Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea; 2. Korea University, Seoul, The Republic of Korea; 3. Center for Spintronics, Korea Institute of Science and Technology (KIST), Seoul, The Republic of Korea; 4. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea; 5. Department of Physics, Pohang University of Science and Technology, Pohang, The Republic of Korea; 6. CNST, National Institute of Standards and Technology, Gaithersburg, MD; 7. Department of Materials Science & Engineering, Chungnam National University, Daejeon, The Republic of Korea*

**9:06**

**CC-02**. **Microscopic theory of spin-orbit torques in ferromagnet/heavy metal bilayers.** I. Ado[1], *O. Tretiakov*[2,3] and M. Titov[1] *1. Radboud University, Nijmegen, Netherlands; 2. Tohoku University, Sendai, Japan; 3. Far Eastern Federal University, Vladivostok, Russian Federation*

**9:18**

**CC-03**. **Spin Orbit Torque in Co/Pt Bilayer Depending on Pt Crystal Structure.** *J. Ryu*[1,2], C. Avci[2], M. Mann[2], M. Kohda[1], J. Nitta[1] and G. Beach[2] *1. Materials Science, Tohoku University, Sendai, Japan; 2. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

**9:30**

**CC-04**. **Swapping Torque in Magnetic Bilayers.** A. Manchon[1] and *H.B. Saidaoui*[1] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

**9:42**

**CC-05**. **Quantifying angular dependence of spin-orbit torques in Ta/CoFeB/MgO trilayers with perpendicular magnetic anisotropy.** *Y. Chen*[1], H. Celik[1], T. Wang[1], H. Kannan[1] and J. Xiao[1] *1. Physics and Astronomy, University of Delaware, Newark, DE*

**9:54**

**CC-06**. **Ultrafast spin-orbit torque switching with large field like torque.** *J. Lee*[1], J. Kwon[1], J. Yoon[1], W. Legrand[1], X. Qiu[1], J. Son[1], R. Ramaswamy[1], R. Mishra[1] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

**10:06**

**CC-07**. **Sign of Spin-Orbit Torques in ferrimagnetic GdFeCo.** *N. Roschewsky*[1], T. Matsumura[2], S. Cheema[3], T. Kato[2], S. Iwata[4] and S. Salahuddin[5] *1. Department of Physics, University of California, Berkeley, Berkeley, CA; 2. Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya, Japan; 3. Department of Materials Science and Engineering, University of California, Berkeley, Berkeley, CA; 4. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan; 5. Department of Electrical Engineering and Computer Sciences, University of California, Berkeley, Berkeley, CA*

**10:18**

**CC-08**. **Spinterface Properties and Magnetic Anisotropy of the Perpendicular Magnetized Ferrimagnetic Insulator $Tm_3Fe_5O_{12}$.** *A. Quindeau*[1], C. Avci[1], W. Liu[5], C. Sun[3], M. Mann[1], A. Tang[1], M. Onbasli[1], D. Bono[1], P. Voyles[3], Y. Xu[2], J. Robinson[6], G. Beach[1] and C.A. Ross[1] *1. MIT, Cambridge, MA; 2. The University of York, York, United Kingdom; 3. Materials Science and Engineering, University of Wisconsin Madison, Madison, WI; 5. Electronics, University of York, York, United Kingdom; 6. University of Cambridge, Cambridge, United Kingdom*

**10:30**

**CC-09**. **Inverse Spin Hall Effect in Au-Ta Alloys.** *D. Qu*[1], S. Huang[2] and C. Chien[1] *1. Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD; 2. Department of Physics, National Taiwan University, Taipei, Taiwan*

**10:42**

**CC-10**. **Spin-transfer-torque switching in magnetic tunnel junctions with perpendicular magnetized CoFeB-based free layer.** *H. Tomita*[1], Y. Tanaka[1], H. Maehara[2], K. Nakamura[1], T. Kitada[1], S. Furukawa[1], H. Kubota[3], A. Fukushima[3], K. Yakushiji[3], S. Yuasa[3] and N. Watanabe[1] *1. Tokyo Electron Yamanashi Limited, Nirasaki, Japan; 2. Tokyo Electron Limited, Tokyo, Japan; 3. National Institute of Advance Industrial Science and Technology (AIST), Tsukuba, Japan*

**10:54**

**CC-11**. **Tuning Spin Transfer Torque In Double Barrier Magnetic Tunnel Junctions.** *P. Coelho*[1], P. Clément[1], C. Ducruet[2], L. Vila[1], R.C. Sousa[1], A. Timopheev[1], M. Chshiev[1] and C. Baraduc[1] *1. SPINTEC, Univ. Grenoble-Alpes / CEA / CNRS, F-3800 Grenoble, France; 2. Crocus Technology, F-38000 Grenoble, France*

**11:06**

**CC-12**. **Micromagnetic Modeling and Optimization of Co/Cu Multilayered Nanowire STT-MRAM.** *M. Al-Rashid*[1], M. Maqableh[2], B. Stadler[2] and J. Atulasimha[1] *1. Virginia Commonwealth University, Richmond, VA; 2. University of Minnesota, Minneapolis, MN*

**11:18**

**CC-13**. **Thermally Driven Spin Transfer Torque in Magnetic Tunnel Junctions.** *A. Bose*[1], A. Shukla[1,3], K. Konishi[3], S. Jain[1], N. Asam[1], H.B. Sing[1], S. Bhuktare[1], D.D. Lam[2], Y. Fujii[2], S. Miwa[2], Y. Suzuki[2] and A. Tulapurkar[1] *1. Electrical Engineering, Indian Institute of Technology, Bombay, Mumbai, India; 2. Graduate School of Engineering Science, Osaka University, Osaka, Japan; 3. Osaka University, Osaka, Japan*

WEDNESDAY MORNING 8:30 — LA GALERIES 3

## Session CD
## DOMAIN WALL, VORTEX AND SKYRMION DYNAMICS I

Jan Vogel, Chair
Institut Néel, CNRS, Grenoble, France

**8:30**

**CD-01**. **Generation of skyrmions by chopping magnetic chiral stripe domains with an electric current.** *S. Lin*[1] *1. Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM*

**8:42**

**CD-02**. **Collapse of a skyrmion in an ultrathin magnetic film.** *S. Rohart*[1,2], J. Miltat[2] and A. Thiaville[2] *1. Université Paris-Sud, Orsay, France; 2. Lab. Physique des Solides, Universite Paris-Sud, Orsay, France*

**8:54**

**CD-03**. **Room-Temperature Stability and Motion Under Current of sub-100nm Skyrmions in Magnetic Nanotracks.** *W. Legrand*[1], D. Maccariello[1], N. Reyren[1], K. Garcia-Hernandez[1], C. Moreau-Luchaire[1], K. Bouzehouane[1], V. Cros[1] and A. Fert[1] *1. Unité Mixte de Physique CNRS/Thales and Université Paris-Sud, Palaiseau, France*

**9:06**

**CD-04**. **Magnetic Skyrmion In Multigrain Systems.** *M. Yoo*[1,2], J. Adam[1], K. Garcia-Hernandez[2], C. Moreau-Luchaire[2], N. Reyren[2], V. Cros[2] and J. Kim[1] *1. Centre for Nanoscience and Nanotechnology (C2N), CNRS, Univ. Paris-Sud, Université Paris-Saclay, Orsay, France; 2. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France*

**9:18**

**CD-05**. **Magneto-transport Properties of Skyrmions in Amorphous Fe/Gd Multilayers.** *S.A. Montoya*[1,2], M.V. Lubarda[4], S. Couture[1,2], J.J. Chess[3], B.J. McMorran[3], V. Lomakin[1,2] and E.E. Fullerton[1,2] *1. Center for Memory Recording Research, University of California San Diego, La Jolla, CA; 2. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA; 3. Department of Physics, University of Oregon, Eugene, OR; 4. Faculty of Polytechnics, University of Donja Gorica, Podgorica, Montenegro*

**9:30**

**CD-06**. **Chiral magnetic excitations in FeGe films.** *E. Turgut*[1], A. Park[1], A. Moehle[1] and G.D. Fuchs[1] *1. Applied and Engineering Physics, Cornell University, Ithaca, NY*

**9:42**

**CD-07**. **Experimental Observation of the Skyrmion Hall Effect.** ***(Invited)*** W. Jiang[1], X. Zhang[3], G. Yu[4], W. Zhang[1], X. Wang[2], M. Jungfleisch[1], J.E. Pearson[1], X. Cheng[2], O. Heinonen[1], K.L. Wang[4], Y. Zhou[3], A. Hoffmann[1] and *S. te Velthuis*[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Department of Physics, Bryn Mawr College, Bryn Mawr, PA; 3. Department of Physics, The University of Hong Kong, Hong Kong, Hong Kong; 4. Electrical Engineering, UCLA, Los Angeles, CA*

**10:18**

**CD-08**. **Coupled vortex gyration in the diamond state studied by time-resolved scanning electron microscopy with polarization analysis.** F. Kloodt[1], *R. Frömter*[1], S. Kuhrau[1], P. Staeck[1] and H. Oepen[1] *1. Institut für Nanostruktur- und Festkörperphysik, Universität Hamburg, Hamburg, Germany*

**10:30**

**CD-09**. **Collective modes in threedimensional magnonic vortex crystals.** *G. Meier*[1], M. Hänze[2], C.F. Adolff[2], B. Schulte[2], J. Möller[2] and M. Weigand[3] *1. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany; 2. University of Hamburg, Hamburg, Germany; 3. Max Planck Institute for Intelligent Systems, Stuttgart, Germany*

10:42

**CD-10**. **Synchronizing Spin Torque Vortex Oscillators For Pattern Recognition.** *P. Talatchian*[1], M. Romera[1], R. Lebrun[1], F. Abreu Araujo[1], P. Bortolotti[1], V. Cros[1], J. Grollier[1], K.J. Merazzo[2,3], L. Vila[2,4], R. Ferreira[6], M. Cyrille[2,3], U. Ebels[2], D. Vodenicarevic[5], N. Locatelli[5] and D. Querlioz[5] *1. Unité Mixte de Physique, CNRS/Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Univ. Grenoble Alpes, CEA, CNRS, SPINTEC, Grenoble, France; 3. Univ. Grenoble Alpes, CEA, LETI MINATEC, Grenoble, France; 4. Univ. Grenoble Alpes, CEA, INAC, NM, Grenoble, France; 5. Institut d'Électronique Fondamentale, CNRS UMR 8622, Univ. Paris-Sud, Université Paris-Saclay, Orsay, France; 6. International IberianNanotechnologyLaboratory (INL), Braga, Portugal*

10:54

**CD-11**. **Control of Deterministic Chaos in a Nucleation of a Magnetic Vortex.** *H. Han*[1], S. Lee[1], D. Jung[1], M. Im[2,3], J. Hong[3], P. Fischer[4] and K. Lee[1] *1. School of Materials Science and Engineering, Ulsan National Institute of Science and Technology, Ulsan, The Republic of Korea; 2. CXRO, Lawrence Berkeley National Laboratory, Berkeley, CA; 3. Department of Emerging Materials Science, Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea; 4. Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA*

11:06

**CD-12**. **Resonant Excitation of the First Order Gyromode in Magnetic Vortex Structures: Time-Resolved Imaging and Vortex Core Reversal.** *G. Dieterle*[1], A. Gangwar[1,2], J. Förster[1], M. Noske[1], H. Stoll[1], I. Bykova[1], M. Weigand[1], G. Woltersdorf[3], C. Back[2] and G.A. Schuetz[1] *1. Modern Magnetic Systems, Max-Planck-Institut for Intelligent Systems, Stuttgart, Germany; 2. Universität Regensburg, Regensburg, Germany; 3. Department of Physics, University of Halle, Halle, Germany*

11:18

**CD-13**. **Spin-wave excitation modes in thick vortex-state circular ferromagnetic nanodots.** R.V. Verba[1,2], A. Hierro-Rodriguez[1], D. Navas[1], J. Ding[3], X. Liu[3], A. Adeyeye[3], K. Guslienko[4,5] and *G.N. Kakazei*[1,3] *1. IFIMUP-IN/Deypartment of Physics and Astronomy, University of Porto, Porto, Portugal; 2. Institute of Magnetism, Kyiv, Ukraine; 3. Department of Electrical & Computer Engineering, National University of Singapore, Singapore, Singapore; 4. Departamento de Física de Materiales, Universidad del País Vasco, San Sedbastian, Spain; 5. IKERBASQUE, the Basque Foundation for Science, Bilbao, Spain*

## Session CE
# PATTERNED FILMS I
Axel Hoffmann, Chair
Argonne National Laboratory, Argonne, IL

**8:30**

**CE-01**. **Light localization and magneto-optic enhancement in magneto-plasmonic meta-structures.** ***(Invited)*** M. Rollinger[1], P. Thielen[1], E. Melander[2], E. Östman[2], *V. Kapaklis*[2], M. Cinchetti[1], A. Garcia-Martin[3], M. Aeschlimann[1] and E. Papaioannou[1] *1. Physics, TU Kaiserslautern, Kaiserslautern, Germany; 2. Physics & Astronomy, Uppsala University, Uppsala, Sweden; 3. IMM-Instituto de Microelectronica de Madrid, Madrid, Spain*

**9:06**

**CE-02**. **Efficient Excitation of Perpendicular Standing Spin-Waves in CoFeB and YIG Films.** *A. Navabi*[1], M. Yazdani[1], P. Khalili[1] and K.L. Wang[1] *1. UCLA, Los Angeles, CA*

**9:18**

**CE-03**. **Single-Step Nanopatterning of Multicomponent Magnetic Metamaterials.** *M. Urbanek*[1,2], V. Krizakova[2], J. Gloss[3], M. Horky[2], L. Flajsman[1], M. Schmid[3], T. Sikola[1,2] and P. Varga[3,1] *1. CEITEC BUT, Brno University of Technology, Brno, Czech Republic; 2. Institute of Physical Engineering, Brno University of Technology, Brno, Czech Republic; 3. Institute of Applied Physics, Vienna University of Technology, Vienna, Austria*

**9:30**

**CE-04**. **Formation of Induced Anisotropy in Alternating Co/Pt and Co/Pd Stripe Patterns.** *S. Kim*[1], Y. Nam[2], Y. Kim[1], J. Choi[3], H. Lee[1] and S. Lim[1] *1. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 2. Research and Development Division, SK Hynix Semiconductor Inc., Icheon, The Republic of Korea; 3. Center for Spintronics Research, Korea Institute of Science and Technology, Seoul, The Republic of Korea*

**9:42**

**CE-05**. **Splitting of the Vortex Gyrotropic Mode in Ferromagnetic Disks with a Nonmagnetic Void.** *J. Ding*[1], S. Lendinez[1], P.N. Lapa[1,2], T. Khaire[1], J.E. Pearson[1], A. Hoffmann[1] and V. Novosad[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Texas A&M University, College Station, TX*

**9:54**

**CE-06**. **Ordered Arrays of Hard/Soft Bilayer Magnetic Antidots Prepared By Focused Ion Beam Nanopatterning.** A. Kaidatzis[1], R. Perez del Real[2], R. Alvaro[3], D. Niarchos[1] and *J. Garcia-Martin*[3] *1. NCSR Demokritos, Aghia Paraskevi, Greece; 2. ICMM, Madrid, Spain; 3. IMM-Instituto de Microelectronica de Madrid, CSIC, Tres Cantos, Spain*

**10:06**

**CE-07**. **Temperature and orientation dependent exchange coupling in epitaxial nanomagnets.** *M.S. Lee*[1], T. Wynn[1], E. Folven[2], R.V. Chopdekar[3], A. Scholl[4], A. Young[4], S.T. Retterer[5], J.K. Grepstad[2] and Y. Takamura[1] *1. Materials Science & Engineering, UC Davis, Davis, CA; 2. Department of Electronics and Telecommunications, NTNU, Trondheim, Norway; 3. Chemical Engineering/Materials Science, University of California, Davis, Davis, CA; 4. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 5. Oak Ridge National Laboratory, Oak Ridge, TN*

**10:18**

**CE-08**. **Artificial Spin Ice: New Developments in Vertex Frustrated Lattices and in Magnetotransport.** ***(Invited)*** *P. Schiffer*[1], I. Gilbert[1], B.L. Le[1], J. Sklenar[1], J. Park[1], Y. Lao[1], C. Nisoli[2], G. Chern[3], D. Rench[4], N. Samarth[4], A. Scholl[5], M. Manno[6], J.D. Watts[6] and C. Leighton[6] *1. University of Illinois at Urbana-Champaign, Champaign, IL; 2. Los Alamos National Laboratory, Los Alamos, NM; 3. University of Virginia, Charlottesville, VA; 4. Penn State University, University Park, PA; 5. ALS - LBNL, Berkeley, CA; 6. University of Minnesota, Minneapolis, MN*

**10:54**

**CE-09**. **Thermally-achieved low energy states in manganite-based artificial spin ice arrays.** *R.V. Chopdekar*[1], M.S. Lee[1], A.M. Kane[1], S.T. Retterer[3], A. Scholl[2] and Y. Takamura[1] *1. Materials Science and Engineering, University of California - Davis, Davis, CA; 2. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 3. Center for Nanophase Materials Science, Oak Ridge National Laboratory, Oak Ridge, TN*

**11:06**

**CE-10**. **Thermally induced magnetic relaxation in square artificial spin ice.** M.S. Andersson[1], S.D. Pappas[2], *H. Stopfel*[2], E. Östman[2], A. Stein[3], P. Nordblad[1], R. Mathieu[1], B. Hjörvarsson[2] and V. Kapaklis[2] *1. Engineering Sciences, Uppsala University, Uppsala, Sweden; 2. Materials Physics, Uppsala University, Uppsala, Sweden; 3. Center for Functional Nanomaterials, Brookhaven National Laboratory, Upton, NY*

**11:18**

**CE-11**. **Order and thermal excitations in square artificial spin ice modeled with Monte Carlo simulations.** *E. Östman*[1], J.C. Andresen[3], H. Stopfel[1], U. Arnalds[2], A. Stein[4], B. Hjörvarsson[1], P. Helenius[3] and V. Kapaklis[1] *1. Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. University of Iceland, Reykjavik, Iceland; 3. Royal Institute of Technology, Stockholm, Sweden; 4. Brookhaven National Laboratory, Brookhaven, NY*

## Session CF
# MICROMAGNETICS AND MRAM
Chun-Yeol You, Chair
DGIST EMS, Daegu, The Republic of Korea

**8:30**

**CF-01**. **Fast computation of nucleation field maps in permanent magnets.** J. Kuehnel[1], J. Fischbacher[2], L. Exl[3,4], E. Mehofer[1] and *T. Schrefl*[2] *1. Faculty of Computer Science, University of Vienna, Vienna, Austria; 2. Danube University Krems, Wiener Neustadt, Austria; 3. Faculty of Mathematics, University of Vienna, Vienna, Austria; 4. Solid State Physics, TU Vienna, Vienna, Austria*

**8:42**

**CF-02**. **Solving the Inverse Magnetostatic Problem using the Adjoint Method.** *F. Bruckner*[1], G. Wautischer[1], C. Abert[1], C. Huber[1], C. Vogler[2] and D. Suess[1] *1. Institute of Solid State Physics, Christian Doppler Laboratory for Advanced Magnetic Sensing and Materials, Vienna University of Technology, Vienna, Austria; 2. Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria*

**8:54**

**CF-03**. **Python interface for OOMMF.** M. Beg[1], R. Pepper[1] and *H. Fangohr*[1] *1. Computational Modelling Group, University of Southampton, Southampton, United Kingdom*

**9:06**

**CF-04**. **Virtual Micromagnetics: A Platform for Accessible and Reproducible Micromagnetic Simulation.** *M. Vousden*[1], M. Bisotti[1], M. Albert[1] and H. Fangohr[1] *1. Computational Modelling Group, University of Southampton, Southampton, United Kingdom*

**9:18**

**CF-05**. **Concurrent Processing Approach to Micromagnetic Simulations.** *S. Fu*[1,3], M. Kuteifan[1,3], S. Couture[1,3], M. Menarini[1,3], I. Volvach[1,2] and V. Lomakin[1,3] *1. Center for Magnetic Recording Research, University of California, San Diego, La Jolla, CA; 2. Material Science and Engineering, University of California, San Diego, San Diego, CA; 3. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA*

9:30

**CF-06**. **Coupling Electrodynamics and Micromagnetics: Modeling of Eddy Currents.** *S. Couture*[1]*, R. Chang[2], I. Volvach[3], S. Fu[4] and V. Lomakin[5] *1. Electrical Engineering, University of California, San Diego, La Jolla, CA; 2. Oracle Corporation, San Diego, CA; 3. Material Science and Engineering, University of California, San Diego, La Jolla, CA; 4. Center for Magnetic Recording Research, University of California, San Diego, La Jolla, CA; 5. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA*

9:42

**CF-07**. **Monitoring Bloch Points Using Winding Number In Micromagnetic Simulations.** *A. Wartelle*[1], S. Jamet[2], C. Thirion[3], O. Fruchart[4] and J. Toussaint[3] *1. QUEST, Institut Néel, Grenoble, France; 2. Nano, Institut Neel, Grenoble, France; 3. Institut Néel, CNRS, Grenoble, France; 4. SPINTEC, CNRS, Grenoble, France*

9:54

**CF-08**. **A self-consistent spin-diffusion model for micromagnetics.** *C. Abert*[1], M. Ruggeri[4], F. Bruckner[3], C. Vogler[3], A. Manchon[2], D. Praetorius[4] and D. Suess[3] *1. Institute of Solid State Physics, Christian Doppler Laboratory for Advanced Magnetic Sensing and Materials, Vienna University of Technology, Vienna, Austria; 2. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 3. Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria; 4. Institute for Analysis and Scientific Computing, TU Wien, Vienna, Austria*

10:06

**CF-09**. **Probing colored magnetization dynamics by formulae of differentiation.** *P. Thibaudeau*[1], J. Tranchida[1,2] and S. Nicolis[2] *1. DAM, Commissariat à l'Energie Atomique, Monts, France; 2. Laboratoire de Mathématiques et Physique Théorique, Université François Rabelais, Tours, France*

10:18

**CF-10**. **All-optical helicity dependent magnetization manipulation in Co/Pt and Co/Pd multilayers.** *G. Kichin*[1], Y. Tsema[1], O. Hellwig[2], V.V. Mehta[2], A. Kimel[1], A. Kirilyuk[1] and T. Rasing[1] *1. Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands; 2. Research, HGST, A Western Digital Company, San Jose, CA*

10:30

**CF-11**. **Materials and Device Optimization in Micromagnetic Systems.** *A. Kovacs*[1], H. Oezelt[1], S. Bance[2], M. Schabes[3] and T. Schrefl[1] *1. Center for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria; 2. Research and Development, Seagate Technology, Londonderry, United Kingdom; 3. Spin Transfer Technologies, Fremont, CA*

**10:42**

**CF-12**. **Current induced configurations in composite spring magnets.** *C.H. Lambert*[1,5], M. Kuteifan[4], M.V. Lubarda[2], E.E. Fullerton[4], V. Lomakin[4] and S. Mangin[3] *1. Department of Electrical Engineering and Computer Science, UC Berkeley, Berkeley, CA; 2. Faculty of Polytechnics, Univeristy of Donja Gorica, San Diego, CA; 3. Institut Jean Lamour, Universite de Lorraine, Vandoeuvre-les-Nancy, France; 4. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA; 5. UMR CNRS 7198 – Université de Lorraine, Institut Jean Lamour, Nancy, France*

**10:54**

**CF-13**. **Write error rates of perpendicular spin-transfer-torque random access memory including micromagnetic effects.** *T. Pramanik*[1], U. Roy[2], L.F. Register[1] and S.K. Banerjee[1] *1. Microelectronics Research Center, Department of Electrical and Computer Engineering, The University of Texas at Austin, Austin, TX; 2. TDK-Headway Technologies Inc., Milpitas, CA*

**11:06**

**CF-14**. **Influence of incomplete Boron removal on magnetic properties of CoFeB/MgO PMA systems for STT-MRAM.** *S. Wang*[1], D. Apalkov[1], R.F. Evans[2], A. Meo[2] and R. Chantrell[2] *1. Semiconductor R&D Center, Samsung Electronics, San Jose, CA; 2. Department of Physics, University of York, York, United Kingdom*

**11:18**

**CF-15**. **Significant reduction in switching current by transient pulse current for p-MTJ.** *S. Pathak*[1], J. Cha[1], S. Lee[1] and J. Hong[1] *1. Materials Science and Engineering, Yonsei University, Seoul, The Republic of Korea*

WEDNESDAY MORNING 8:30 | STUDIO 9-10

## Session CG
# NON-RARE-EARTH FE ALLOYS AND COMPOUNDS
Balamurugan Balasubramanian, Chair
University of Nebraska, Lincoln, NE

**8:30**

**CG-01**. **Accelerating the Discovery of Permanent Magnet Alloys: A Bulk Combinatorial Approach.** ***(Invited)*** *C.I. Nlebedim*[1], J. Geng[1], R. Ott[1] and M.J. Kramer[2] *1. Critical Materials Institute, Ames Laboratory, US Department of Energy, Ames, IA; 2. Division of Materials Science and Engineering, Ames Laboratory, US Department oF Energy, Ames, IA*

**9:06**

**CG-02**. **Withdrawn**

9:18

**CG-03**. **Fabrication and characterization of $L1_0$-FeNi films with coercivity in excess of 1 kOe using a combinatorial sputtering approach.** *A. Kaidatzis*[1], G. Giannopoulos[1], V. Psycharis[1] and D. Niarchos[1] *1. Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Athens, Greece, Athens, Greece*

9:30

**CG-04**. **Synthesis of $L1_0$ FeNi thin films via rapid thermal annealing.** *J.C. De Rojas*[1], D.A. Gilbert[2], J.W. Lau[2] and K. Liu[1] *1. Physics Department, University of California, Davis, Davis, CA; 2. NIST, Gaithersburg, MD*

9:42

**CG-05**. **Direct Liquid Phase Synthesis of ordered $L1_0$ FePt Nanoparticles with Bi Doping.** V. Tzitzios[1], *F.M. Abel*[1], N. Tzitzios[2], V. Alexandrakis[2] and G. Hadjipanayis[1] *1. Physics and Astronomy, University of Delaware, Newark, DE; 2. NCSR Demokritos, Institute of Nanoscience and Nanotechnology, Athens, Greece*

9:54

**CG-06**. **Engineering Tetragonality and Microstructure in $Fe_5SiB_2$-based Intermetallic Compounds.** R. Barua[1,4], B. Lejeune[2], *I. McDonald*[2], V. Harris[1,4], L. Lewis[2] and G. Hadjipanayis[3] *1. Center for Microwave Magnetic Materials and Integrated Circuits, Northeastern University, Boston, MA; 2. Chemical Engineering, Northeastern University, Boston, MA; 3. Physics and Astronomy, University of Delaware, Newark, DE; 4. Electrical and Computer Engineering, Northeastern University, Boston, MA*

10:06

**CG-07**. **Correlation of Phase Fraction to Coercivity of Alnico Magnet Alloys.** *W. Tang*[1], L. Zhou[1], A. Palasyuk[1], K.W. Dennis[1], J. Cui[1], M.J. Kramer[1] and I.E. Anderson[1] *1. Ames Laboratory, Iowa State University, Ames, IA*

10:18

**CG-08**. **Study on the Structure and Magnetism of $Fe_3Co_3Nb_2$ Using Neutron Powder Diffractions.** *X. Xu*[1,2], B. Balasubramanian[2,1], B. Das[1,2], Y. Liu[3], A. Huq[3] and D.J. Sellmyer[4,2] *1. Physics and Astronomy, University of Nebraska, Lincoln, NE; 2. Nebraska Center for Materials and Nanoscience, University of Nebraska-Lincoln, Lincoln, NE; 3. Oak Ridge National Laboratory, Oak Ridge, TN; 4. University of Nebraska - Lincoln, Lincoln, NE*

10:30

**CG-09**. **Core-shell $\alpha$”-$Fe_{16}N_2$/Fe composite particles.** *B. Ma*[1], J. Liu[1] and J. Wang[1] *1. Electrical and computer Engineering, University of Minnesota, Minneapolis, MN*

10:42

**CG-10**. **Additive Manufacturing Of Enhanced Net-Shape Alnico Magnets.** *E.M. White*[1], A. Kassen[1], E. Simsek[1], W. Tang[1], R. Ott[1] and I.E. Anderson[1] *1. Division of Materials Sciences and Engineering, Ames Lab (USDOE), Ames, IA*

**10:54**

**CG-11. Cooperative and Non-Cooperative Magnetization Reversal in Alnico Permanent Magnets.** *R. Skomski*[1], L. Ke[2], M.J. Kramer[2], I.E. Anderson[2], C. Wang[2], W. Zhang[1] and D.J. Sellmyer[1] *1. Physics and Astronomy, University of Nebraska - Lincoln, Lincoln, NE; 2. Ames Laboratory, Ames, IA*

**11:06**

**CG-12. Development of Controlled Solid State Grain Alignment for Alnico Permanent Magnets in Near-Final Shape.** *I.E. Anderson*[2], A. Kassen[2], E. White[2], A. Palasyuk[5], L. Zhou[5], W. Tang[5] and M.J. Kramer[5] *2. Division of Materials Sciences and Engineering, Ames Lab (USDOE), Ames, IA; 5. Ames Laboratory, Iowa State University, Ames, IA*

WEDNESDAY MORNING 8:30 — STUDIO 7-8

## Session CH
# NOVEL MAGNETIC ORDER IN THIN FILMS I
Christy Kinane, Chair
Rutherford Appleton Laboratory, STFC, Didcot, United Kingdom

**8:30**

**CH-01. The Experimental and Theoretical Study of Mn Doped $Bi_2Te_3$.** *A. Ghasemi*[1]*, D. Kepaptsoglou[2], A.I. Figueroa[3], G. Naydenov[1], P.J. Hasnip[1], M. Probert[1], Q.M. Ramasse[4], G. van der Laan[3], T. Hesjedal[5] and V. Lazarov[1] *1. University of York, York, United Kingdom; 2. SuperSTEM Laboratory, Daresbury, United Kingdom; 3. Diamond Light Source, Didcot, United Kingdom; 4. SuperSTEM Laboratory, Daresbury, United Kingdom; 5. University of Oxford, Oxford, United Kingdom*

**8:42**

**CH-02. Hidden Interfaces and Interface-driven ferromagnetic states in topological insulator heterostructures.** *V. Lauter*[1], F. Katmis[2,3], D. Heiman[4] and J. Moodera[2,3] *1. QCMD, Neutron Sciences Directorate, Oak Ridge National Laboratory, Oak Ridge, TN; 2. Department of Physics, Massachusetts Institute of Technology, Cambridge, MA; 3. Francis Bitter Magnet Laboratory, Massachusetts Institute of Technology, Cambridge, MA; 4. Department of Physics, Northeastern University, Boston, MA*

**8:54**

**CH-03. Large Enhancement of Spin Orbit Torque Originated from Topological Surface States in $Bi_2Se_3$.** Y. Wang[1], *D. Zhu*[1], S. Shi[1], R. Mishra[1] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

**9:06**

**CH-04**. **Physicochemical Analysis Of $Bi_2Te_3$ – (Fe, Eu) – $Bi_2Te_3$ Junctions Grown By Molecular Beam Epitaxy Method.** *K.A. Balin*[1,2], R. Rapacz[1,2], M. Weis[1,3], P. Ruello[3], M. Lejman[3], G. Vaudel[3], B. Wilk[1,3] and J. Szade[1,2] *1. A. Chelkowski Institute of Physics, University of Silesia in Katowice, Katowice, Poland; 2. Silesian Center for Education and Interdisciplinary Research, University of Silesia in Katowice, Chorzów, Poland; 3. Institut des Molécules et Matériaux du Mans, UMR CNRS 6283, Université du Maine, Le Mans, France*

**9:18**

**CH-05**. **Emerging Magnetic Order In Metallic Copper Induced By Proximity To Cobalt: A Detailed X-Ray Spectromicroscopy Study.** Z. Chen[1], *H. Ohldag*[2], S. Redjai Sani[3], A.D. Kent[3], R. Kukreja[4], E.E. Fullerton[4], S. Bonetti[5], T. Chase[6], H. Durr[2] and J. Stohr[2] *1. Physics, Stanford University, Stanford, CA; 2. SLAC National Accelerator Laboratory, Menlo Park, CA; 3. Department of Physics, New York University, New York, NY; 4. UC San Diego, La Jolla, CA; 5. Department of Physics, Stockholm University, Stockholm, Sweden; 6. Applied Physics, Stanford University, Stanford, CA*

**9:30**

**CH-06**. **Interface magnetism in Pt/ferromagnet heterostructures probed by XMCD and XRMR.** *C. Klewe*[1], P. Shafer[1], P. Bougiatioti[2], J. Schmalhorst[2], D. Meier[2], O. Kuschel[3], J. Wollschläger[3], L. Bouchenoire[4,5], S. Brown[4,5], G. Reiss[2], T. Kuschel[6] and E. Arenholz[1] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 2. Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany; 3. Center of Physics and Chemistry of New Materials, Osnabrück University, Osnabrück, Germany; 4. XMaS, European Synchrotron Radiation Facility, Grenoble, France; 5. Department of Physics, University of Liverpool, Liverpool, United Kingdom; 6. Physics of Nanodevices, Zernike Institue for Advanced Materials, University of Groningen, Groningen, Netherlands*

**9:42**

**CH-07**. **Modifications of ultrathin Pt/Co/Pt films induced by visual and extreme ultraviolet light pulses.** *A. Maziewski*[1], I. Sveklo[1], J. Kisielewski[1], Z. Kurant[1], A. Bartnik[2], M. Jakubowski[3], E. Dynowska[3], D. Klinger[3], R. Sobierajski[3] and A. Wawro[3] *1. Faculty of Physics, University of Bialystok, Bialystok, Poland; 2. Institute of Optoelectronics, Military University of Technology, Warsaw, Poland; 3. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*

**9:54**

**CH-08**. **Novel magnetic states in gadolinium induced by interfacial hybridization with $C_{60}$.** *T. Moorsom*[1], C. Kinane[2], S. Langridge[2], P. Gargiani[3], M. Valvidares[3], J.D. Witt[1], B. Hickey[1], G. Burnell[1] and O. Cespedes[1] *1. School of Physics & Astronomy, University of Leeds, Leeds, United Kingdom; 2. Rutherford Appleton Laboratory, Chilton, United Kingdom; 3. BOREAS beamline, ALBA Synchrotron Light Facility, Barcelona, Spain*

**10:06**

**CH-09**. **Observation of hybrid interfaces states at $C_{60}$/ferromagnetic heterojunctions.** *J. Zhang*[2], C. Woffinden[2] and A. Pratt[1,2] *1. Internation Center for Young Scientists, National Institute for Materials Science, Tsukuba, United Kingdom; 2. Physics, University of York, York, United Kingdom*

**10:18**

**CH-10**. **Determining the Induced Magnetic Moment in Graphene by Polarised Neutron Reflectivity and X-ray Magnetic Circular Dichroism.** *R. Aboljadayel*[1], D.M. Love[1], T. Charlton[2], C. Kinane[2], C. Vas[3], A. Ionescu[1], J. Llandro[1], M. Martin[4], R. Weatherup[4], C. Barnes[2], S. Hofmann[4] and S. Langridge[1] *1. Cavendish Laboratory, Physics Department, University of Cambridge, Cambridge, United Kingdom; 2. ISIS, Rutherford Appleton Laboratory, Chilton, United Kingdom; 3. Paul Scherrer Institute, Zurich, Switzerland; 4. Department of Engineering, University of Cambridge, Cambridge, United Kingdom*

**10:30**

**CH-11**. **Asymmetric intramolecular hybridization-induced spin polarization of TPT molecules chemisorbed on Fe/W(110) films and Co/Cu(111) nanoislands.** *D.E. Bürgler*[1], V. Hess[1], T. Esat[1], R. Friedrich[2,3], F. Matthes[1], V. Caciuc[2,3], N. Atodiresei[2,3], S. Blügel[2,3] and C.M. Schneider[1] *1. Peter Grünberg Institute (PGI-6), Forschungszentrum Jülich, Jülich, Germany; 2. Institute for Advanced Simulation (IAS-1), Forschungszentrum Jülich, Jülich, Germany; 3. Peter Grünberg Institute (PGI-1), Forschungszentrum Jülich, Jülich, Germany*

**10:42**

**CH-12**. **Extended antiferromagnetic coupling at organic semiconductor/ferromagnetic interfaces.** *A. Pratt*[2], P. Graziosi[3], K. Tarafder[4], I. Bergenti[1], J. Zhang[2], P. Oppeneer[4], V.A. Dediu[3] and Y. Yamauchi[5] *1. ISMN-CNR, Bologna, Italy; 2. Physics, University of York, York, United Kingdom; 3. CNR-ISMN, Bologna, Italy; 4. Uppsala University, Uppsala, Sweden; 5. National Institute for Materials Science, Tsukuba, Japan*

**10:54**

**CH-13**. **Magnetoresistance and anomalous Hall effect measurements in B20 $Fe_{1-x}Co_xGe$ epilayers with changing Helix wavelength.** *C.S. Spencer*[1], J. Gayles[2,3], N.A. Porter[1], F. Freimuth[4], S. Blügel[4], J. Sinova[2,3], Y. Mokrousov[4] and C.H. Marrows[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. Institut für Physik, Mainz, Germany; 3. Texas A&M University, College Station, TX; 4. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich, Jülich, Germany*

**11:06**

**CH-14**. **Revealing the Spiral Magnetic Phase in Textured Erbium using Neutron Diffraction and Reflectometry.** *N. Satchell*[1,2], J.D. Witt[2], C. Kinane[1], P. Curran[3], S. Langridge[1], G. Burnell[2] and J. Cooper[1] *1. Rutherford Appleton Laboratory, Chilton, United Kingdom; 2. Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 3. Physics, University of Bath, Bath, United Kingdom*

**11:18**

**CH-15**. **Depth Profile Investigation of $LaAlO_3$(001)/EuO(001) using Polarised Neutron Reflectivity and Low Energy Muon Spin Rotation.** *R. Aboljadayel*[1], P. Baker[2], N. Steinke[2], T. Saerbeck[3], A. Ionescu[1], Z. Salman[4], C. Barnes[1], T. Prokscha[4] and S. Langridge[2] *1. Cavendish Laboratory, Physics Department, University of Cambridge, Cambridge, United Kingdom; 2. ISIS, Rutherford Appleton Laboratory, Harwell, United Kingdom; 3. Institut Laue-Langevin, Grenoble, France; 4. Laboratory for Muon-Spin Spectroscopy, Paul Scherrer Institut, Zurich, Switzerland*

WEDNESDAY MORNING 8:30 | STUDIO 3-4

## Session CI
# COUPLING EFFECTS IN MAGNETOELECTRICS AND COMPLEX OXIDES

Dustin Gilbert, Chair
NIST, Gaithersburg, MD

**8:30**

**CI-01**. **Strain-Modulated Magnetic Reversal In Amorphous TbFe Film.** *T. Lee*[1], M.K. Panduranga[2] and G. Carman[1,2] *1. Materials Science and Engineering, University of California, Los Angeles, Los Angeles, CA; 2. Mechanical & Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA*

**8:42**

**CI-02**. **Extraction of Magnetoelastic Coefficients Using Acoustically Driven Ferromagnetic Resonance.** *D. Labanowski*[1], P. Gowtham[1], A. Jung[1] and S. Salahuddin[1] *1. University of California, Berkeley, Berkeley, CA*

**8:54**

**CI-03**. **An Impedance Spectroscopy Study Of Magnetodielectric Coupling In $BaTiO_3$-$CoFe_2O_4$ Nanostructured Multiferroics.** *U. Acevedo*[1,2], R. Lopez-Noda[3], R. Breitwieser[2], F. Calderón[4], S. Ammar[2] and R. Valenzuela[1] *1. Instituto de Investigaciones en Materiales, Universidad Nacional Autónoma de México, Cuidad de México, Mexico; 2. ITODYS, CNRS UMR-7086, Université Paris Diderot, Sorbonne Paris Cité, Paris, France; 3. Departamento de Física Aplicada, Instituto de Cibernética, Matemáticas y Física, La Habana, Cuba; 4. Instituto de Ciencia y Tecnología de Materiales, Universidad de la Habana, La Habana, Cuba*

9:06

**CI-04**. **Polarization Fatigue Of $BiFeO_3$ Films With Ferromagnetic Metallic Electrodes.** *C. Chen*[1], J. Wang[2,3], C. Li[3,4], Z. Wen[5], J. Du[2,3] and Q. Xu[1,2] *1. Department of Physics, Southeast University, Nanjing, China; 2. National Laboratory of Solid State Microstructures, Nanjing University, Nanjing, China; 3. Department of Physics, Nanjing University, Nanjing, China; 4. Department of Materials Science and Engineering, Nanjing University, Nanjing, China; 5. College of Physics, Qingdao University, Qingdao, China*

9:18

**CI-05**. **Core-shell Nanowire Magnetic/Ferroelectric Multiferroic Heterostructure for Voltage Tunable RF Devices.** *Z. Zhou*[1], G. Grocke[1], X. Wang[2], Y. Gao[2], N.X. Sun[2], B.M. Howe[3] and X. Chen[1] *1. Energy Systems Division, Argonne National Laboratory, Lemont, IL; 2. ECE, Northeastern University, Boston, MA; 3. Materials and Manufacturing Directorate, Air Force Research Lab, Wright Patterson Air Force Base, OH*

9:30

**CI-06**. **Monte Carlo Investigation Of The Coupling Between Ferroelectric Polarization And Magnetic Order In Delafossite $CuCrO_2$.** *A. Al Baalbaky*[1], D. Ledue[1], R. Patte[1] and R. Fresard[2] *1. Normandie Univ., INSA Rouen, UNIROUEN, CNRS, GPM, 76800 Rouen, France; 2. Normandie Univ, ENSICAEN, UNICAEN, CNRS, CRISMAT, 14050 Caen, France*

9:42

**CI-07**. **Self cooled, piezoelectric controlled non volatile memory effect in charge-strain co-mediated magnetoelectric coupling based energy efficient multiferroic heterostructures.** *K. Singh*[1] and D. Kaur[1] *1. Physics Department, IIT Roorkee, Roorkee, India*

9:54

**CI-08**. **Coverage Dependent Magnetization Switching in an Ultrathin Fe Film on Ferroelectric Surfaces.** *D. Odkhuu*[1] and T. Tumurbaatar[2] *1. Department of Physics, Incheon National University, Incheon, The Republic of Korea; 2. Department of Physics, University of Ulsan, Ulsan, The Republic of Korea*

10:06

**CI-09**. **Bound states and charge transport on magnetic domain walls in Weyl semimetals.** *Y. Araki*[1,2], A. Yoshida[1] and K. Nomura[1] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Sendai, Japan*

10:18

**CI-10**. **Ferromagnetic Ground State Properties of Nb-doped $EuTiO_3$ Single Crystal.** *S. Roy*[1], N. Khan[1] and P. Mandal[1] *1. Experimental Condensed Matter Physics, Saha Institute of Nuclear Physics, Calcutta, India*

**10:30**

**CI-11**. **The Temperature Dependent Structural Studies on the Spin Correlated System $A_2FeCoO_6$ (A= Sm, Eu, Dy and Ho) using Synchrotron Radiation.** *G. Haripriya*[1], R. Pradheesh[1], M. Singh[2], A. Sinha[2], K. Sethupathi[1] and V. Sankaranarayanan[1] *1. Department of Physics, IIT Madras, Chennai, India; 2. Indus Synchrotron Utilization Division, RRCAT, Indore, India*

**10:42**

**CI-12**. **Sign reversal of magnetization and exchange bias in $NdFe_{0.5}Cr_{0.5}O_3$.** *M. Sharannia*[1], S. De[1], R. Singh[2], A. Das[2], R. Nirmala[1] and P. Santhosh[1] *1. Department of Physics, Indian Institute of Technology Madras, Chennai, India; 2. Solid State Physics Division, Bhabha Atomic Research Centre, Mumbai, India*

**10:54**

**CI-13**. **Magnetostructural Transition and Cobalt Spin Behavior in Metallic $Pr_{0.50}Sr_{0.50}CoO_3$ Perovskite.** J. Padilla-Pantoja[1], J. Herrero-Martín[2], B. Bozzo[1], E. Pellegrin[2], J. Rodríguez-Velamazán[3], J. Blasco[4] and *J. Garcia-Muñoz*[1] *1. Institut de Ciència de Materials de Barcelona -CSIC, E-08193 Bellaterra, Spain; 2. ALBA Synchrotron Light Facility, 08290 Cerdanyola del Vallès, Spain; 3. Institute Laue Langevin, 38042 Grenoble Cedex 9, France; 4. Instituto de Ciencia de Materiales de Aragón, CSIC-Univ. de Zaragoza, 50009 Zaragoza, Spain*

**11:06**

**CI-14**. **Anomalous spin disordered magnetic properties of strongly correlated honeycomb compound $In_3Cu_2VO_9$.** S. Jia[1], X. Yu[1], Q. Wang[1] and *L. Zou*[1] *1. Research Laboratory of Computational Materials Sciences, Institute of Solid State Physics, the Chinese Academy of Sciences, Hefei, China*

**11:18**

**CI-15**. **Magnetization Reversal Induced By Adsorption Of Chiral Molecules On Ferromagnet.** *O. Ben Dor*[1], S. Yochelis[1], L.T. Baczewski[2], R. Naaman[3] and Y. Paltiel[1] *1. Applied Physics Department, The Hebrew University of Jerusalem, Jerusalem, Israel; 2. Institute of Physics Polish Academy of Sciences, Warszawa, Poland; 3. The Weizmann Institute of Science, Rehovot, Israel*

## Session CP
# SPIN CURRENT AND RELATED EFFECTS I (Poster Session)

Ssu-Yen Huang, Chair
National Taiwan University, Taipei, Taiwan

**CP-01**. **Berry phase of valley and spin quantum Hall conductance of silicene coupled to a ferroelectric layer.** *M.B. Jalil*[1], Z. Siu[1], S. Tan[2] and Y. Li[3] *1. Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Data Storage Institute, Agency for Science Technology and Research (A*STAR), Singapore, Singapore; 3. Department of Physics, Hangzhou Dianzi University, Hangzhou, China*

**CP-02**. **Interface selective magnon coupling in compensated ferrimagnets.** *J. Cramer*[1,2], E. Guo[3], S. Geprägs[4], A. Kehlberger[1], G. Jakob[1], S.T. Goennenwein[4] and M. Kläui[1,2] *1. Institute of Physics, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. Quantum Condensed Materials Division, Oak Ridge National Laboratory, Oak Ridge, TN; 4. Walther-Meißner-Institut, Bayerische Akademie der Wissenschaften, Garching, Germany*

**CP-03**. **Effect of surface hybridization on interlayer exchange coupling in ferromagnet/topological insulator/feromagnet trilayer.** C. Ho[1] and *M.B. Jalil*[2] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Information Storage Materials Laboratory, Electrical and Computer Engineering Department, National University of Singapore, Singapore, Singapore*

**CP-04**. **Thermoelectric Power based on Spin Seebeck effect in YIG/$[Ta/W]_n$ system.** *H. Yuasa*[1,2], N. Onizuka[1] and K. Tamae[1] *1. Graduate School and Faculty of Information Science and Electrnical Engineering, Kyushu University, Fukuoka, Japan; 2. PRESTO, Japan Science and Technology Agency, Kawaguchi, Japan*

**CP-05**. **Current-induced magnetization switching in heavy metal/ferromagnet multilayers without magnetic field.** A. Zelalem[1], K. Meng[1], B. Zhao[1], Y. Wu[1], J. Miao[1], *X. Xu*[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China*

**CP-06**. **Spin transport property in thermally evaporated pentacene films by using a dynamical spin injection method.** Y. Tani[1], Y. Teki[2] and *E. Shikoh*[1] *1. Engineering, Osaka City University, Osaka, Japan; 2. Science, Osaka City University, Osaka, Japan*

**CP-07**. **Spin mediated enhanced negative magnetoresistance in $Ni_{80}Fe_{20}$ and p-silicon bilayer.** *S. Kumar*[1] and P. Lou[1] *1. UC, Riverside, Riverside, CA*

**CP-08**. **Spin Seebeck effect and magnon-mediated magnetoresistance in nonlocal YIG/Pt nanostructures.** *Y. Cai*[1], Y. Wu[1], K. Meng[1], X. Xu[1], J. Miao[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China*

**CP-09**. **Magnetoresistance Induced by Magnetic Scattering and Spin Orbital Coupling in PtTa/YIG.** *B. Miao*[1], L. Sun[1,2], D. Wu[1,2], C. Chien[3] and H. Ding[1,2] *1. National Laboratory of Solid State Microstructures and Department of Physics, Nanjing University, Nanjing, China; 2. Collaborative Innovation Center of Advanced Microstructures, Nanjing University, Nanjing, China; 3. Department of Physics of Astronomy, Johns Hopkins University, Baltimore, MD*

**CP-10**. **Spin polarization induced by zero average magnetic fields in nanowires.** H. Lin[1], Y. Su[2] and *S. Chen*[1] *1. Department of Applied Physics and Chemistry, University of Taipei, Taipei, Taiwan; 2. Physics, National Taiwan University, Taipei, Taiwan*

**CP-11**. **Theoretical study of spin currents in ferrimagnets.** *T. Kumamoto*[1], D. Miura[1] and A. Sakuma[1] *1. Applied physics, Tohoku University, Sendai, Japan*

**CP-12**. **XMCD detection of induced paramagnetic moment in Pt on $Y_3Fe_5O_{12}$.** *T. Kikkawa*[1], M. Suzuki[2], J. Okabayashi[3], K. Uchida[4,5], D. Kikuchi[1], Z. Qiu[6,7] and E. Saitoh[1,7] *1. Institute for Materials Research and WPI AIMR, Tohoku University, Sendai, Japan; 2. JASRI/SPring-8, Sayo, Hyogo, Japan; 3. Research Center for Spectrochemistry, University of Tokyo, Tokyo, Japan; 4. Institute for Materials Research, Tohoku University, Sendai, Japan; 5. PRESTO, Japan Science and Technology Agency, Saitama, Japan; 6. WPI-AIMR, Tohoku University, Sendai, Sendai, Japan; 7. Spin Quantum Rectification Project, ERATO, Japan Science and Technology Agency, Sendai, Japan*

**CP-13**. **Magnetization switching induced by spin-orbit torques in perpendicularly magnetized Ta / GdFeCo bilayers.** *T. Matsumura*[2], D. Oshima[3], T. Kato[2], N. Roschewsky[1], S. Salahuddin[4] and S. Iwata[3] *1. Department of Physics, University of California, Berkeley, Berkeley, CA; 2. Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya, Japan; 3. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan; 4. Department of Electrical Engineering and Computer Sciences, University of California, Berkeley, Berkeley, CA*

**CP-14**. **Improvement of spin thermoelectric voltage with three different structures of ferromagnet/non-magnetic stacks.** *C. Jeon*[1], D. Kim[1], K. Lee[1], S. Srivathsava[2], J. Jeong[2] and B. Park[1] *1. Department of Material Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 2. Department of Materials Science & Engineering, Chungnam National University, Daejeon, The Republic of Korea*

**CP-15**. **Nonuniformity of microwave power induced dc voltage in YIG/NM systerm.** *H. Zhou*[1], X. Fan[1], L. Ma[2], S. Zhou[2] and X.D. Sheng[1] *1. Lanzhou University, Lanzhou, China; 2. Physics, Tongji University, Shanghai, China*

## Session CQ

# MAGNETIZATION DYNAMICS I: DAMPING AND SIMULATIONS (Poster Session)

Ki-Suk Lee, Co-Chair
Ulsan National Institute of Science Technology, Ulsan, The Republic of Korea
Jung-Il Hong, Co-Chair
Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea

**CQ-01**. **Enhancement of magnetization dynamic damping and two-magnon scattering effect in Fe thin films with Gd dopants.** S. Jiang[1], L. Sun[2], Y. Fu[1], Q. Chen[1], X. Zhou[1], J. Yue[1], H. Yuan[1], Y. Yin[1], Z. Huang[1], *Y. Zhai*[1,3] and H. Zhai[3] *1. Department of Physics, Southeast University, Nanjing, China; 2. College of Physics and Electronic Engineering, Hainan Normal University, Haikou, China; 3. National Laboratory of Solid State Microstructures, Nanjing University, Nanjing, China*

**CQ-02**. **The dynamic damping and magnetization in Tb/Cr/Py with different Cr layer thickness.** *L. Sun*[1], J. Yue[3], S. Jiang[2], H. Yuan[3], Q. Chen[3], X. Zhou[3], Z. Huang[3], E. Liu[5,3], Z. Yao[1], Y. Zhai[3] and H. Zhai[4] *1. College of Physics and Electronic Engineering, Hainan Normal University, Haikou, China; 2. KTH Royal Institute Technology, Stockholm, Sweden; 3. Department of Physics, Southeast University, Nanjing, China; 4. National Laboratory of Solid Microstructures, Nanjing University, Nanjing, China; 5. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, China*

**CQ-03**. **Theoretical Investigation of Damping in Exchange Bias Systems.** *A.E. Farrar*[1], J. Beik Mohammadi[2], T. Mewes[2] and C.K. Mewes[2] *1. Mathematics / MINT, University of Alabama, Tuscaloosa, AL; 2. Physics and Astronomy / MINT, University of Alabama, Tuscaloosa, AL*

**CQ-04**. **Influence of Thickness Dependent Crystal Ordering on Magnetization Damping in Half-Metallic $Co_2Fe_{0.4}Mn_{0.6}Si$ Thin Films.** *S. Pan*[1], S. Saha[1], J. Sinha[1], T. Seki[2,3], K. Takanashi[2,4] and A. Barman[1] *1. Condensed Matter Physics and Material Sciences, S N Bose National Centre For Basic Sciences, Kolkata, India; 2. Institute for Materials Research, Tohoku University, Sendai, Japan; 3. JST PRESTO, Saitama, Japan; 4. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

**CQ-05**. **Magnetic damping of sputter deposited, exchange coupled bilayers: Py|Fe.** *P. Omelchenko*[1], E.A. Montoya[2], C. Coutts[1], B. Heinrich[1] and E. Girt[1] *1. Physics, Simon Fraser University, Burnaby, BC, Canada; 2. Physics & Astronomy, University of California, Irvine, Irvine, CA*

**CQ-06**. **Towards Suppression of Stochastic Pinning Though Modification of Gilbert Damping.** *T.J. Broomhall*[1], A. Rushforth[2] and T.J. Hayward[1] *1. Department of Engineering Materials, University of Sheffield, Sheffield, United Kingdom; 2. School of Physics & Astronomy, University of Nottingham, Nottingham, United Kingdom*

**CQ-07**. **Thickness dependent of perpendicular magnetic anisotropy and Gilbert damping on amorphous FeTaC films.** *B. Samantaray*[1,2], A.K. Singh[3], A. Perumal[3] and P. Mandal[1] *1. Condensed Matter Physics, Saha Institute of Nuclear Physics, Kolkata, India; 2. Institute of Physics, Bhubaneswar, India; 3. Physics, Indian Institute of Technology Guwahati, Guwahati, India*

**CQ-08**. **Magnetization dynamics and magnetic anisotropy of ion irradiated $L1_0$-MnGa films.** *T. Kato*[1], H. Kano[1], D. Oshima[3], S. Takahashi[2], Y. Sonobe[2] and S. Iwata[3] *1. Department of Electrical Engineering and Computer Science, Nagoya University, Nagoya, Japan; 2. Samsung R&D Institute Japan, Yokohama, Japan; 3. Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan*

**CQ-09**. **Multi-scale Modelling of Interfacial Stress in Magnetic Systems.** *A.P. Wynn*[1], J.S. Dean[1] and C.L. Freeman[1] *1. Department of Materials Science and Engineering, The University of Sheffield, Sheffield, United Kingdom*

**CQ-10**. **Dynamic Response of Strain-Mediated Perpendicular Magnetic Tunnel Junctions.** *Q. Wang*[1], C. Liang[1], X. Li[1] and G. Carman[2] *1. Department of Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA; 2. UCLA, Los Angeles, CA*

**CQ-11**. **Large Curvature Effects on Thin Ferromagnetic Films Leading to Controllable Anisotropy.** *O. Tretiakov*[1], M. Morini[2], V. Slastikov[3] and S. Vasylkevych[3] *1. Tohoku University, Sendai, Japan; 2. Universita di Parma, Parma, Italy; 3. University of Bristol, Bristol, United Kingdom*

**CQ-12**. **Modeling the effects of magnetic nanoparticle shapes on the reversible transverse susceptibility for amplification of nuclear magnetic resonance signals.** *H. ElBidweihy*[1] and M. Barbic[2] *1. Department of Electrical and Computer Engineering, United States Naval Academy, Annapolis, MD; 2. Applied Physics and Instrumentation Group, Howard Hughes Medical Institute, Janelia Research Campus, Ashburn, VA*

**CQ-13**. **Approach to three-dimensional magnetic domain structure reorganization in SANS measurement.** *M. Tokii*[1], E. Kita[2,3], C. Mitsumata[4], K. Ono[5], H. Yanagihara[2] and M. Matsumoto[1] *1. Univ. of Tsukuba, Tsukuba, Japan; 2. Institute of Applied Physics, University of Tsukuba, Tsukuba, Japan; 3. National Institute of Technology, Ibaraki College, Hitachinaka, Japan; 4. NIMS, Tsukuba, Japan; 5. KEK, Tsukuba, Japan*

**CQ-14**. **Local Shape Anisotropy Control in Ferromagnetic Antidot Networks.** *L. Stoleriu*[1], A. Stancu[1] and J. Gräfe[2] *1. Department of Physics, Al. I. Cuza University of Iasi, Iasi, Romania; 2. Max Planck Institute for Intelligent Systems, Stuttgart, Germany*

**CQ-15**. **Investigation Of Magnetization Dynamics Of $Fe_{20}Pd_{80}$ Circular Island Arrays Employing Ferromagnetic Resonance Measurements And Micromagnetic Simulations.** *A. Ciuciulkaite*[1], R. Brucas[2], E. Östman[1], A. Kumar[2], P. Svedlindh[2], B. Hjörvarsson[1] and V. Kapaklis[1] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. Department of Engineering Sciences, Uppsala University, Uppsala, Sweden*

WEDNESDAY MORNING 9:30 | GRAND BALLROOM

## Session CR
# SPIN HALL EFFECT II (Poster Session)
Wei Zhang, Chair
Oakland University, Rochester, MI

**CR-01**. **Enhancement of Extrinsic Spin-Orbital Coupling Induced by Ta Impurities in Copper.** Y. Wang[1,2], J. Wu[2], X. Zhou[1], Q. Chen[1], X. Fan[2], *Y. Zhai*[1] and J. Xiao[2] *1. Department of Physics, Southeast University, Nanjing, China; 2. Physics and Astronomy, University of Denver, Denver, CO*

**CR-02**. **Giant Spin Hall Angle From Bismuth Selenide And Heavy Metal Multilayers.** *D. Mahendra*[1], J. Chen[3], D. Zhang[3], P. Quarterman[3], Z. Zhao[3], H. Li[2] and J. Wang[3,1] *1. Physics and Astronomy, University of Minnesota, Minneapolis, MN; 2. Chemical Engineering and Material Science, University of Minnesota, Minneapolis, MN; 3. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN*

**CR-03**. **Inverse spin-Hall effect voltage generation by nonlinear spin-wave excitation.** L. Feiler[1], K. Sentker[1], M. Brinker[1], N. Kuhlmann[1], F. Stein[1] and *G. Meier*[2] *1. Institute for Applied Physics, University of Hamburg, Hamburg, Germany; 2. Max Planck Institute for the Structure and Dynamics of Matter, Hamburg, Germany*

**CR-04**. **Large Spin Hall Angles in Permalloy/Gold Heterostructures Resulting from Magnetic Impurities.** *R. Bennet*[1], A. Hojem[2], W. Li[1], D. Wesenberg[2], X. Fan[2] and B. Zink[1] *1. University of Denver, Denver, CO; 2. Physics and Astronomy, University of Denver, Denver, CO*

**CR-05**. **Effect Of Magnetic Anisotropy On Spin Hall Magnetoresistance In Pt/Spinel Ferrites.** *T. Tainosho*[2], T. Niizeki[1], J. Inoue[2], S. Sharmin[2], E. Kita[2] and H. Yanagihara[2] *1. WPI-AIMR, Tohoku University, Sendai, Japan; 2. Institute of Applied Physics, University of Tsukuba, Tsukuba, Japan*

**CR-06**. **Temperature Dependence of the Inverse Spin Hall Effect in $Ni_{80}Fe_{20}$/Pt Bilayers.** *J. Gomez*[1], L. Avilés-Félix[1], J. Vargas[1] and A. Butera[1] *1. Magnetic Resonance Laboratory, CONICET / Centro Atomico Bariloche, Bariloche, Argentina*

**CR-07**. **Temperature and Underlayer Thickness Dependence of Spin Hall Effect in Ta/CoFeB/MgO.** M. Cecot[1], *W. Skowronski*[1], J. Wrona[2], J. Kanak[1], A. Zywczak[3], L. Karwacki[4], A. Dyrdal[4], J. Barnas[4] and T. Stobiecki[1] *1. Department of Electronics, AGH University of Science and Technology, Krakow, Poland; 2. Singulus Technologies AG, Kahl am Main, Germany; 3. Academic Center of Materials and Nanotechnology, AGH University of Science and Technology, Kraków, Poland; 4. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland*

**CR-08**. **Role of atomic-layer alignments to intrinsic spin Hall conductivity in Pt-based superlattices film.** *T. Ito*[1], K. Nawa[1], A. Pradipto[1,2], T. Akiyama[1], T. Ito[1], T. Ono[2] and K. Nakamura[1] *1. Physics Engineering, Mie University, Tsu, Japan; 2. Institute for Chemical Research, Kyoto University, Uji, Japan*

**CR-09**. **Spin Hall magnetoresistance in non-magnet/ferromagnet/non-magnet tri-layer structures.** *J. Choi*[1], J. Lee[1], S.C. Baek[1] and B. Park[1] *1. Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea*

**CR-10**. **Spin-to-charge interconversion: a study on spin memory loss at metallic interfaces.** *V. Pham*[1,2], L. Vila[1,2], G. Zahnd[1,2], A. Marty[2], P. Noël[1,2], P. Laczkowski[1], V. Nguyen[1], M. Jamet[1], W. Savero-Torres[1] and J. Attane[1,2] *1. SPINTEC, INAC, CEA-Grenoble, Grenoble, France; 2. Université Grenoble Alpes, Grenoble, France*

**CR-11**. **Interplay of spin dependent effects in Pt/TmIG bilayer with perpendicular magnetic anisotropy.** *C. Avci*[2], A. Quindeau[1], M. Mann[2], C. Pai[2], C.A. Ross[2] and G. Beach[2] *1. Massachusetts Institute of Technology, Cambridge, MA; 2. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

**CR-12**. **Unidirectional spin Hall magnetoresistance in Pt/CoFe/Ta multilayers.** *D. Meier*[1], A. Pfeiffer[1], R. Klett[1], N. Shepheard[1], J. Schmalhorst[1] and G. Reiss[1] *1. Department of Physics, Bielefeld University, Bielefeld, Germany*

**CR-13**. **Unidirectional spin Hall magnetoresistance in Ta/Fe and Pt/Fe bilayers.** *Y. Lv*[1], D. Zhang[1] and J. Wang[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN*

**CR-14**. **Driving Currents by Magnetization Dynamics in systems with Inversion Asymmetry: From the DC-Limit to Optical Frequencies.** *F. Freimuth*[1] *1. IAS-1, Forschungszentrum Julich, Julich, Germany*

**CR-15**. **Magnon excitation in YIG by spin Hall effect and spin Seebeck effect.** H. Wu[1], C. Wan[1], X. Zhang[1], Z. Yuan[1], Q. Zhang[1], J. Qin[1], *X. Han*[1] and S. Zhang[2] *1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. University of Arizona, Tucson, AZ*

## Session CS
# NANOWIRES AND NANOPARTICLES II (Poster Session)

Jordi Sort, Chair
Universitat Autonoma de Barcelona, Bellaterra, Spain

**CS-01**. **Local probing of exchange-bias using X-ray magnetic circular dichroism and $^{57}$Fe Mössbauer spectrometry on polyol-made $NiFe_2O_4$-CoO nano-aggregates.** T. Gaudisson[1], S.K. Sharma[1], *S. Ammar*[1], N. Yaacoub[2], J. Grenèche[2], N. Menguy[3], M. Arrio[3], P. Sainctavit[3] and E. Otero[4] *1. ITODYS, CNRS UMR-7086, Université Paris Diderot, Sorbonne Paris Cité, Paris, France; 2. IMMM, CNRS UMR-6283, Université du Maine, Le Mans, France; 3. IMPMC, CNRS UMR-7590, Université Pierre & Marie Curie, Sorbonne Universités, Paris, France; 4. Synchrotron SOLEIL, Orne les Merisiers, France*

**CS-02**. **Fully Integrated Continuous and Scalable Production of High Quality Nanofibers/Nanotubes as Functional Nano Building Blocks for Devices.** *X. Chen*[1], G. Grocke[1], Z. Zhou[1] and P. Ignacio-de Leon[1] *1. Energy Systems Division, Argonne National Laboratory, Lemont, IL*

**CS-03**. **Chiral Magnetization Switching In Magnetic Nanoparticles.** *N. Grisewood*[1], G. Duff[1], R.V. Hügli[1] and H. Braun[1] *1. School of Physics, University College Dublin, Dublin, Ireland*

**CS-04**. **Creep induced anisotropy in CoFeSiB cold drawn amorphous microwires.** H. Chiriac[1], A. Damian[1,2], S. Corodeanu[1], V. Dobrea[1], T.A. Ovari[1] and *N. Lupu*[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Faculty of Physics, Alexandru Ioan Cuza University, Iasi, Romania*

**CS-05**. **Magnetic field tunability of heat transfer properties in a ferromagnetic nanowire.** *C. Li*[1], H. Huang[1], Z. Wei[1], W. Tang[1] and C. Wu[1] *1. Institute of Nanoengineering and Microsystems, National Tsing Hua University, Hsinchu, Taiwan*

**CS-06**. **Magnetic Properties of Variable Diameter Multi-Walled Carbon Nanotubes Filled with Magnetite Nanoparticles.** *K. Stojak Repa*[1], E.M. Palmero[2], J. Alonso Masa[1,3], M. Phan[1], M. Vázquez[2] and H. Srikanth[1] *1. Department of Physics, University of South Florida, Tampa, FL; 2. Instituto de Ciencia de Materiales de Madrid (CSIC), Madrid, Spain; 3. Basque Center for Materials/University of Basque Country, Derio, Spain*

**CS-07**. **Stable tetragonal phase and magnetic properties of Fe-doped $HfO_2$ nanoparticles.** *T.S. Sales*[1], F.H. Cavalcante[1,2], B. Bosch-Santos[1], L.F. Pereira[1], G. Cabrera-Pasca[1], A.W. Carbonari[1], R.S. Freitas[3] and R.N. Saxena[1] *1. CRPq, IPEN/USP, São Paulo, Brazil; 2. Department of Electrical and Computer Engineering, Colorado State University, Fort Collins, CO; 3. Instituto de Física, Universidade de São Paulo, São Paulo, Brazil*

**CS-08**. **Magnetic and structural properties of $CoFe_2O_4$ nanoparticles investigated by hyperfine interactions.** *I.T. Matos*[1], N.M. Nascimento[1], G. Cabrera-Pasca[1], F.B. Effenberger[3], R.S. Freitas[2] and A.W. Carbonari[1] *1. CRPq, IPEN-CNEN/SP, Sao Paulo, Brazil; 2. Departamento de Física dos Materiais e Mecânica, Instituto de Física, Universidade de São Paulo, São Paulo, Brazil; 3. Centro Universitário FEI, São Paulo, Brazil*

**CS-09**. **Temperature dependence of magnetic hysteresis scaling for cubic $Fe_3O_4$ nanoparticles.** *T. Sato*[1], K. Nagaoka[1], S. Kobayashi[2], J. Manjanna[3] and T. Murakami[2] *1. Engineering, Iwate University, Morioka, Japan; 2. Iwate University, Morioka, Japan; 3. Rani Channamma University, Belagavi, India*

**CS-10**. **Magnetic Behaviors of Superparamagnetic Iron Oxide Nanoparticles : A Mathematical Model and Experimental Investigations.** *K. Wu*[1] and J. Wang[2] *1. Electrical Engineering, University of Minnesota, Minneapolis, MN; 2. Electrical and Computer Engineering, School of Physics & Astronomy, Minneapolis, MN*

**CS-11**. **Tracking the magnetization evolution in $\gamma$-$Fe_2O_3$ / metallic Fe core-shell nanoparticle variants.** *C. Kons*[1], Z. Nemati[1], H. Srikanth[1], M. Phan[1] and D.A. Arena[1] *1. Department of Physics, University of South Florida, Tampa, FL*

**CS-12**. **Magnetic Shielding Of 3-Phase Current By A Composite Material At Low Frequencies.** K. Livesey[1], R.E. Camley[1], Z. Celinski[1] and *S. Maat*[2] *1. Physics, University of Colorado, Colorado Springs, Colorado Springs, CO; 2. YTC - America, Camarillo, CA*

**CS-13**. **Green sol-gel auto-combustion synthesis of magnetic chitosan nanocomposites.** *M. Salavati-Niasari*[1] and F. Ansari[1] *1. Institute of Nano Science and Nano Technology, University of Kashan, Kashan, The Islamic Republic of Iran*

**CS-14**. **Magnetic and Structural Properties of $Mn_5Ge_3$ Nanoparticles.** *O. Tosun*[1], M. Salehi-Fashami[1], B. Balasubramanian[2], R. Skomski[2], D.J. Sellmyer[2] and G. Hadjipanayis[1] *1. Physics&Astronomy, University of Delaware, Newark, DE; 2. Physics&Astronomy, University of Nebraska Lincoln, Lincoln, NE*

**CS-15**. **Magnetic field annealing effect and superparamagnetic contributions in one-dimensional CoPt nanostructures.** S.S. Ali[1,2], L. Wenjing[1], K. Javed[1], M. Irfan[1], F. Aleem[2], G. Zhai[3] and *X. Han*[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Department of Physics, The University of Lahore, Lahore, Pakistan; 3. National Space Science Center, Chinese Academy of Sciences, Beijing, China*

## Session CT
# BIOCHEMICAL AND BIOMEDICAL APPLICATIONS II (Poster Session)

Olga Kazakova, Co-Chair
NPL, Teddington, United Kingdom
Nikoleta Theodoropoulou, Co-Chair
Texas State University, San Marcos, TX

**CT-01**. **Magneto-visco-elastic properties of biohybrids based on superparamagnetic iron oxide nanoparticles coupled to aliginate polymer chains: A comparative study on the nature of the particle/polymer link.** T.T. Nguyen[1], G. Franceschin[1], F. Mammeri[1], *S. Ammar*[1], S. Gantz[2], C. Galindo-Gonzales[2] and A. ponton[2] *1. ITODYS, CNRS UMR-7086, Université Paris Diderot, Sorbonne Paris Cité, Paris, France; 2. MSC, CNRS UMR-7057, Université Paris Diderot, Sorbonne Paris Cité, Paris, France*

**CT-02**. **Precise control of a helical microrobot in pulsatile flow by controlling the rotating frequency of the external magnetic field.** *J. Kim*[1], J. Nam[1], W. Lee[1], B. Jang[1] and G. Jang[1] *1. Dept of Mechanical Convergence Engineering, Hanyang University, Seoul, The Republic of Korea*

**CT-03**. **A Modular Helical Magnetic Millirobot for the Effective Helical Navigating and Stable Unclogging Motions in Curved Human Blood Vessels.** *S. Jeon*[1], D. Lee[1], W. Kim[1] and H. Cho[1] *1. Div. Mechanical and Automotive Engineering, Kongju National University, Cheonan, The Republic of Korea*

**CT-04**. **Design and Analysis of a Field Modulated Magnetic Screw for Artificial Heart.** *Z. Ling*[1], W. Zhao[1] and J. Ji[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**CT-05**. **Three-dimensional sensitivity mapping of a handheld magnetic probe for sentinel lymph node biopsy.** *A. Kuwahata*[1], S. Chikaki[1], A. Ergin[1], M. Kaneko[1], M. Kusakabe[1] and M. Sekino[1] *1. The University of Tokyo, Tokyo, Japan*

**CT-06**. **Remote sensing micro-fluidic tracer by utilizing light scattering micro-crystals under magnetic fields.** *Y. Takanezawa*[1], T. Chikashige[2] and M. Iwasaka[1,2] *1. AdSM, Hiroshima University, Higashi-Hiroshima, Japan; 2. RNBS, Hiroshima University, Higashi-Hiroshima, Japan*

**CT-07**. **Self-organized soft micro-magnets in polymer matrix for microfluidic devices.** S. Mekkaoui[1,2], K. Bhattacharya[1], A. Tamion[1], V. Dupuis[1], J. Chateaux[2], J. Desgouttes[2], *D. Le Roy*[1] and A. Deman[2] *1. Institute of Light and Matter, Villeurbanne, France; 2. Institut des Nanotechnologies de Lyon, Villeurbanne, France*

**CT-08**. **Superparamagnetic Nanoparticle Detection System by Using a Fundamental Mode Orthogonal Fluxgate(FM-OFG) Gradiometer.** *H. Karo*[1] and I. Sasada[1] *1. Department of Applied Science for Electronics and Materials, Kyushu University, Kasuga, Japan*

**CT-09**. **Blood Clot Detection Using Magnetic Nanoparticles.** *H. Khurshid*[1,2], B. Friedman[3,4], B. Berwin[5] and J. Weaver[2,1] *1. Thayer School of Engineering, Dartmouth College, Lebanon, NH; 2. Radiology, Dartmouth-Hitchcock Medical Center, Lebanon, NH; 3. Geisel School of Medicine, Dartmouth-Hitchcock Medical Center, Lebanon, NH; 4. Section of Cardiology, Dartmouth-Hitchcock Medical Center, Lebanon, NH; 5. Microbiology and Immunology Department, Dartmouth-Hitchcock Medical Center, Lebanon, NH*

**CT-10**. **Interfacing Engineered Magnetic Materials and Living Systems.** *E.A. Rozhkova*[1] *1. Center for Nanoscale Materials, Argonne National Laboratory, Argonne, IL*

**CT-11**. **Modulation of light localization in the iridophores of the deep-sea highlight hatchetfish *Sternoptyx pseudobscura* under magnetic field.** *M. Iwasaka*[1] and S. Ohtsuka[2] *1. Research Institute for Nanodevice and Bio Systems, Hiroshima University, Higashi-Hiroshima, Japan; 2. 2) Graduate School of Biosphere Science, Hiroshima University, Higashi-Hiroshima, Japan*

**CT-12**. **Magnetically tunable control of light reflection in an unusual optic protein of squid.** *M. Iwasaka*[1], K. Tagawa[2] and Y. Kikuchi[2,3] *1. Research Institute for Nanodevice and Bio Systems, Hiroshima University, Higashi-Hiroshima, Japan; 2. Marine Biological Laboratory, Graduate School of Science, Hiroshima University, Onomichi, Japan; 3. Department of Biological Science, Graduate School of Science, Hiroshima University, Higashi-Hiroshima, Japan*

**CT-13**. **Magneto-biomimetic analysis of fish iris efficiency for assisting eyes in human.** *Y. Mizukawa*[1,2], M. Iwasaka[1,3] and S. Ohtsuka[4] *1. Graduate School of Advanced Sciences of Matter, Hiroshima University, Higashihiroshima, Japan; 2. Japan Society for the Promotion of Science, Tokyo, Japan; 3. Research Institute for Nanodevice and Bio Systems, Hiroshima University, Higashihiroshima, Japan; 4. Graduate School of Biosphere Science, Hiroshima University, Higashihiroshima, Japan*

**CT-14**. **Deep-sea fish skin as a model for developing magnetic treatments of gout.** *Y. Mizukawa*[1,2], M. Iwasaka[1,3] and S. Ohtsuka[4] *1. Graduate School of Advanced Sciences of Matter, Hiroshima University, Higashihiroshima, Japan; 2. Japan Society for the Promotion of Science, Tokyo, Japan; 3. Research Institute for Nanodevice and Bio Systems, Hiroshima University, Higashihiroshima, Japan; 4. Graduate School of Biosphere Science, Hiroshima University, Higashihiroshima, Japan*

**CT-15**. **Unconscious Awareness of the Flicker in Supraliminal Stimulus with Pseudo-"Blindsight".** *H. Nakagawa*[1] and S. Ueno[2] *1. Department of Electrical and Electronic Engineering, Tokyo Denki University, Adachi-ku, Japan; 2. Department of Applied Quantum Physics, Kyushu University, Fukuoka, Japan*

## Session CU
# COMPLEX OXIDES II: BULK AND NEW MAGNETIC MATERIALS (Poster Session)

Wenqing Liu, Chair
University of Cambridge, Cambridge, United Kingdom

**CU-01**. **Carrier induced ferromagnetism and magnetoresistance in $Eu_{1-x}La_xTiO_3$.** *K. Rubi*[1] and R. Mahendiran[2] *1. Physics, National University of Singapore, Singapore, Singapore; 2. Physics Dept, National University of Singapore, Singapore, Singapore*

**CU-02**. **Doping dependent magnetism and exchange bias in $CaMn_{1-x}Re_xO_3$.** *V. Markovich*[1], I. Fita[2], A. Wisniewski[2], R. Puzniak[2], C. Martin[3], D. Mogilyansky[1], G. Jung[1,2] and G. Gorodetsky[1] *1. Department of Physics and The Ilse Katz Institute for Nanoscale Science and Technology, Ben-Gurion University of the Negev, Beer-Sheva, Israel; 2. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland; 3. Laboratoire CRISMAT, UMR 6508, ISMRA, Caen, France*

**CU-03**. **Optical Sensing Of Magnetic Nanooxides Before And After Deformation.** *A. Telegin*[1], E.V. Mostovshchikova[1], B.A. Gizhevskii[1] and S.V. Naumov[1] *1. M.N. Miheev Institute of Metal Physics UB of RAS, Yekaterinburg, Russian Federation*

**CU-04**. **Thermal conductivity of ferrimagnet $GdBaMn_2O_{5.0}$ single crystals.** *J. Wu*[1], J. Zhao[1], H. Xu[1], X. Liu[1], A. Taskin[2], Y. Ando[2], X. Zhao[3] and X. Sun[1] *1. Hefei National Laboratory for Physical Sciences at Microscale, University of Science and Technology of China, Heifei, China; 2. II. Physikalisches Institut, Universität zu Köln, Koln, Germany; 3. School of Physical Sciences, University of Science and Technology of China, Heifei, China*

**CU-05**. **Structure, magnetism, and transport properties for Ca doping in $Sr_2IrO_4$.** G. Zhou[2], X. Gu[2], X. Yang[2], X. Gao[2], J. Peng[2], A. Zhang[1] and *X. Wu*[2] *1. College of Science, Hohai University, Nanjing, China; 2. Nanjing University, Nanjing, China*

**CU-06**. **Magnetic susceptibility of multiferroics and chemical ordering.** *M. Marysko*[1], V. Laguta[1], I.P. Raevski[2], R.O. Kuzian[3,4], N. Olekhnovich[5], A.V. Pushkarev[5], Y.V. Radyush[5], S.I. Raevskaya[2] and V.V. Titov[2] *1. Institute of Physics ASCR, Praha 6, Czech Republic; 2. Dep. of Physics, Research Institute of Physics, Rostov on Don, Russian Federation; 3. Institute for Problems of Materials Science, Kiev, Ukraine; 4. Domostia Int. Physics Center, San Debestian, Spain; 5. Scientific-Practical Materials Res. Centre, Minsk, Belarus*

**CU-07**. **Synthesis and Study of Magnetic properties of Hard-soft $SrFe_{12-x}Al_xO_{19}$-*x* Wt.% $Ni_{0.5}Zn_{0.5}Fe_2O_4$ nanocomposite Ferrite.** *H. Adhikari*[1], M. Ghimire[1], D. Neupane[1] and S.R. Mishra[1] *1. Physics and Materials Science, The University of Memphis, Memphis, TN*

**CU-08**. **Magnetic spatial profile across a molecular / metal interface.** *J. Shoup*[1], F. Al Ma'Mari[2], M.D. Rogers[2], O. Cespedes[2], C. Kinane[3], S. Langridge[3], J. Borchers[4], B.J. Kirby[4] and D.A. Arena[1] *1. Dept. of Physics, University of South Florida, Tampa, FL; 2. School of Physics & Astronomy, University of Leeds, Leeds, United Kingdom; 3. Rutherford Appleton Laboratory, Chilton, United Kingdom; 4. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD*

**CU-09**. **Magnetic and Electrical Properties of MBE-Grown $Mn_2CoAl$ Films.** *K. Yamasaki*[1], K. Arima[1], Y. Togami[1], M. Tsukahara[1], S. Yamada[1], T. Kanashima[1] and K. Hamaya[1] *1. Graduate of Engineering Science, Osaka University, Toyonaka, Japan*

**CU-10**. **Depth-Directional Magnetic Modification To Produce Magnetic Layered Structure By High Energetic Ion-Irradiation And Annealing For Bulk FeRh.** *R. Soma*[1], A. Iwase[1], Y. Saitoh[3], R. Ishigami[4] and T. Matsui[2] *1. Department of Materials Science, Osaka Prefecture University, Sakai, Japan; 2. Research Organization for the 21st Century, Osaka Prefecture University, Sakai, Japan; 3. Takasaki Advanced Radiation Research Institute, National Institutes for Quantum and Radiological Science and Technology, Takasaki, Japan; 4. Wakasawan Energy Research Center, Tsuruga, Japan*

**CU-11**. **High Entropy Magnetic Alloys for Magnetocaloric Applications.** M. Kurniawan[1], *A. Perrin*[1], P. Xu[1], V. Keylin[1] and M.E. McHenry[2] *1. Materials Science Engineering, Carnegie Mellon, Pittsburgh, PA; 2. Carnegie Mellon University, Pittsburgh, PA*

**CU-12**. **Effect of Disorder on the Magnetic and Electronic Band Properties of a Prospective Spin-gapless Semiconductor MnCrVAl.** P.R. Kharel[1], P. Lukashev[4], Y. Jin[3], *J. Waybright*[1], S. Gilbert[1], P. Grey[5], B. Staten[4], S. Valloppilly[6], Y. Huh[1] and D.J. Sellmyer[2] *1. Physics, South Dakota State University, Brookings, SD; 2. University of Nebraska - Lincoln, Lincoln, NE; 3. Physics and Astronomy, University of Nebraska Lincoln, Lincoln, NE; 4. Department of Physics, University of Northern Iowa, Cedar Falls, IA; 5. Department of Computer Science, University of Northern Iowa, Cedar Falls, IA; 6. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE*

**CU-13**. **Kinetics of First Order Magnetostructural Transition in Single Crystalline FeRh Thin Film.** Y. Song[1], T. Wang[1], Z. Xiang[1], S. Ma[1] and *W. Lu*[1] *1. School of Materials Science and Engineering, Tongji University, Shanghai, China*

**CU-14**. **Effects of Energetic Electron Irradiation on Magnetic Properties of Cu-1%Fe Alloy.** A. Iwase[1], Y. Fujimura[1], S. Semboshi[3], Y. Saitoh[4] and *T. Matsui*[2] *1. Department of Materials Science, Osaka Prefecture University, Sakai, Japan; 2. Research Organization for the 21st Century, Osaka Prefecture University, Sakai, Japan; 3. Institute for Materials Research, Tohoku University, Sakai, Japan; 4. National Institutes for Quantum and Radiological Science and Technology, Takasaki, Japan*

**CU-15**. **Study on the Magnetic Hardening and Anisotropy of $L1_0$-Ordered $Mn_{1.15}Ga$ Alloy.** *C. Li*[1], Q. Lu[1], M. Wang[1], H. Zhang[1], D. Zhang[1], D. Liu[2] and M. Yue[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. Institute of Microstructure and Property of Advanced Materials, Beijing University of Technology, Beijing, China*

WEDNESDAY
MORNING
9:30

GRAND BALLROOM

## Session CV
# MAGNETO-CALORIC MATERIALS I (Poster Session)

Maximilian Fries, Co-Chair
TU Darmstadt, Darmstadt, Germany
Zaven Altounian, Co-Chair
McGill University, Montreal, Canada

**CV-01**. **Enhanced mechanical properties and age stability of room temperature magnetocaloric plates $La_{0.8}Ce_{0.2}Fe_{12.5}Mn_{0.2}Si_{1.3}H_\delta$ with extra Fe.** *Y. Li*[1], F. Shen[1], F. Liang[1], M. Zhang[1], J. Wang[1], H. Kuang[1], F. Hu[1], R. Ji[1] and B. Shen[1] *1. State Key Laboratory of Magnetism, Institute of Physics, University of Chinese Academy of Sciences, Chinese Academy of Sciences, Beijing, China*

**CV-02**. **Effect of partial substitution of La by Ce on the nature of phase transition in the $La_{1-x}Ce_xFe_{11.2}Co_{0.7}Si_{1.1}$ alloys.** P. Gebara[1], J. Marcin[1] and *I. Skorvanek*[1] *1. Magnetism, Institute of Physics, Slov. Acad. Sci., Kosice, Slovakia*

**CV-03**. **How to enable bulk-like martensitic transformation in epitaxial films?** *M. Wodniok*[1], N. Teichert[1], L. Helmich[1] and A. Huetten[1] *1. Physics Department, Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany*

**CV-04**. **Effect of Hydrostatic Pressure on Saturation Magnetization And Magnetocaloric Effect in Ni-Mn-In Heusler Alloy.** *F. Liang*[1], F. Hu[1], J. Wang[1], H. Kuang[1], J. Sun[1] and B. Shen[1] *1. State Key Laboratory of Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**CV-05**. **Magnetostructural Transformation And Magnetocaloric Effect In $Ni_{42}Mn_{47.5}Sn_{10.5}$ And $Ni_{41.5}Mn_{47.5}Sn_{10.5}Zn_{0.5}$ Ferromagnetic Shape Memory Alloys.** N. ul Hassan[1], I. Shah[1], J. Liu[1], Y. Gong[1], G. Xu[1] and *F. Xu*[1] *1. School of Materials Science and Engineering, Nanjing University of Science and Technology, Nanjing, China*

**CV-06**. **Effects Of Partial Substitution Of Ni By Cr On The Transport, Magnetic Entropy, And Adiabatic Temperature Changes Of $Ni_{50}Mn_{37}In_{13}$.** *S. Pandey*[1], A. Quetz[1], A. Aryal[1], T. Samanta[3], M. Blinov[2], I. Rodionov[2], I. Dubenko[1], D. Mazumdar[1], A. Granovsky[2], V. Prudnikov[2], S. Stadler[3] and N. Ali[1] *1. Physics, Southern Illinois University, Carbondale, IL; 2. Physics, Lomonosov Moscow State University, Moscow, Russian Federation; 3. Physics, Louisiana State University, Baton Rouge, LA*

**CV-07**. **Magnetostructural Phase Transitions and Magnetocaloric Effects in $Mn_{1-x}Al_xCoGe$ Compounds.** *P. Hill*[1], A. Aryal[2], A. Quetz[2], S. Pandey[2], T. Samanta[3], I. Dubenko[2], D. Mazumdar[2], S. Stadler[3] and N. Ali[2] *1. Physics & Engineering Physics, Southeast Missouri State University, Cape Girardeau, MO; 2. Physics, Southern Illinois University, Carbondale, USA, Carbondale, IL; 3. Physics & Astronomy, Louisiana State University, Baton Rouge, LA*

**CV-08**. **Magnetostructural Coupling and Magnetocaloric Effect in Co and Ge Doped MnNiSi System.** *J. Chen*[1], H. Zhang[1], M. Yue[1], E. Liu[2], Q. Lu[1], D. Zhang[1], W. Liu[1] and Q. Wu[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. State Key Laboratory of Magnetism, Institute of Physics, Beijing, China*

**CV-09**. **Thermodynamics and Magnetism at the First-order Magnetostructural Transition in $Mn_3GaC$ Powder and Single Crystal Samples.** *F. Scheibel*[1], T. Gottschall[2], M. Ghorbani Zavareh[3,4], Y. Skourski[3], Ö. Cakir[5,6], R. Meckenstock[1], F. Cugini[7], O. Gutfleisch[2], J. Wosnitza[3,4], M. Solzi[7], M. Farle[1,8] and M. Acet[1] *1. Faculty of Physics, University Duisburg-Essen, Duisburg, Germany; 2. Fb11, FG FM, TU Darmstadt, Darmstadt, Germany; 3. Dresden High Magnetic Field Laboratory (HLD-EMFL), Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 4. Institut für Festkörperphysik, TU Dresden, Dresden, Germany; 5. Physics Department, Yildiz Technical University, Istanbul, Turkey; 6. Physics Engineering Department, Ankara University, Ankara, Turkey; 7. Physics Department and CNISM, University of Parma, Parma, Italy; 8. Center for Functionalized Magnetic Materials, Immanuel Kant Baltic Federal University, Kaliningrad, Russian Federation*

**CV-10**. **Magnetism and magnetocaloric effect in $(Gd_{5-x}Sc_x)Si_{1.8}Ge_{2.2}$.** K. Rudolph[1], *A. Pathak*[1], Y. Mudryk[1] and V.K. Pecharsky[1,2] *1. The Ames Laboratory, U.S. Department of Energy, Iowa State University, Ames, IA; 2. Department of Materials Science and Engineering, Iowa State University, Ames, IA*

**CV-11**. **The Impact Of Doping On Electronic Structure And Magnetic Properties Of $Fe_2P$ Class Magnetocalorics.** *J. Goraus*[1] *1. Institute of Physics, University of Silesia, Katowice, Poland*

**CV-12**. **Magnetocaloric properties of $GdZn_2$.** *K. Matsumoto*[1] and K. Hiraoka[1] *1. Ehime University, Matsuyama, Japan*

**CV-13**. **Magnetocaloric Effect In $ErNi_2$ Melt-Spun Ribbons.** *J.L. Sanchez Llamazares*[1], P. Ibarra-Gaytán[1], C. Sanchez-Valdes[2,4] and P. Alvarez-Alonso[3] *1. División de Materiales Avanzados, Instituto Potosino de Investigación Científica y Tecnológica A.C., San Luis Potosi, Mexico; 2. División Multidisciplinaria, Ciudad Universitaria, Universidad Autónoma de Ciudad Juárez, Ciudad Juarez, Mexico; 3. Electricidad y Electrónica, Universidad del País Vasco, Lejona, Spain; 4. Departamento de Materiales Avanzados, Centro de Nanociencias y Nanotecnología, Universidad Nacional Autónoma de México, Ensenada, Mexico*

**CV-14**. **Observation of large magnetocaloric effect in equiatomic binary compound ErZn.** *L. Li*[1], C. Xu[2], Y. Yuan[2], Y. Qi[1] and S. Zhou[2] *1. Northeastern University, Shenyang, China; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

**CV-15**. **The Effect of Particle Size on the Magnetic Properties of Nanostructured $Y_2Fe_{17}$.** *A. Aslani*[1], M. Ghahremani[2,1], L.H. Bennett[1] and E. Della Torre[1] *1. Electrical and Computer Engneering, The George Washington University, Washngton, DC; 2. CME, Shepherd University, Shepherdstown, WV*

WEDNESDAY MORNING 9:30 — GRAND BALLROOM

## Session CW

# INDUCTORS AND TRANSFORMERS I (Poster Session)

Joseph Davies, Co-Chair
NVE Corporation, Eden Prairie, MN
Katie Sunday, Co-Chair
Drexel University, Philadelphia, PA

**CW-01**. **Load Characteristics of Wireless Power Transfer System with Different Resonator Number and Resonant Type.** *Y. Zhang*[1] *1. Department of Electrical Engineering, Tsinghua University, Beijing, China*

**CW-02**. **A Multilayer Power Inductor Fabricated By Ceramic/ferrite Materials Co-firing System Based on LTCC Technology.** Y. Li[1,2], *D. Chen*[3], L. Han[1], H. Su[1], Y. Xie[2] and H. Zhang[4] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; 2. Department of Physics and Astronomy, University of Delaware, Newark, DE; 3. Hainan University, Haikou, China; 4. University of Electronic Science and Technology of China, Chengdu, China*

**CW-03**. **The Design and Fabrication of DC-DC Converter Substrates Based On LTCC Technology.** *Y. Li*[1,2], L. Han[1], D. Chen[3], H. Su[1], H. Zhang[4] and Y. Xie[2] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; 2. Department of Physics and Astronomy, University of Delaware, Newark, DE; 3. Hainan University, Haikou, China; 4. University of Electronic Science and Technology of China, Chengdu, China*

**CW-04**. **Dynamical Stability Analysis of Magnetically Controlled Saturable Reactor.** B. Tong[1], Q. Yang[1,2], *R. Yan*[1] and L. Zhu[2] *1. Hebei University of Technology, Tianjin, China; 2. Municipal Key Laboratory of Advanced Technology of Electrical Engineering and Energy, Tianjin, China*

**CW-05**. **PWM Inverter-Excited Iron Loss Characteristics of Reactor Core.** *A. Yao*[1], K. Tsukada[1], K. Fujisaki[1], Y. Shindo[2], N. Yoshikawa[2] and T. Yoshitake[2] *1. Toyota Technological Institute, Nagoya-city, Japan; 2. Kawasaki Heavy Industries Ltd., Akashi, Japan*

**CW-06**. **DC Magnetic Field-controlled Voltage Amplification Effect in Magnetostrictive-piezoelectric Transformer Laminates.** S. Zhang[1], M. Zhang[1], *S.W. Or*[1] and S.L. Ho[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, Hong Kong*

**CW-07**. **Measurement Research on Magnetic Properties of Electrical Sheet Steel under Different Temperature, Frequency and DC Bias.** D. Chen[1] and *B. Bai*[1] *1. School of Electrical Engineering, Shenyang University of Technology, Shenyang, China*

**CW-08**. **Performance Evaluation of Nanocrystalline versus Ferrite Magnetic Materials in Solid-State Transformers.** *M. Bahmani*[1] *1. Electric Power Engineering, Chalmers University of Technology, Gothenburg, Sweden*

**CW-09**. **Orthogonal Decomposition Of Core Loss In The Rolling And Transverse Directions Of The Non-Grain Oriented Silicon Steels.** *Y. Li*[1], X. Wan[1], J. Li[1], Q. Yang[1,2] and J. Zhu[3] *1. Province-Ministry Joint Key Laboratory of EFEAR, Hebei University of Technology, Tianjin, China; 2. Tianjin Key Laboratory of AEEET, Tianjin Polytechnic University, Tianjin, China; 3. School of EMMS, University of Technology, Sydney, Sydney, NSW, Australia*

**CW-10**. **High-Frequency Electrical Characterization of Nanocrystalline Magnetic Materials Considering Non-Sinusoidal Waveforms.** *M. Bahmani*[1] *1. Electric Power Engineering, Chalmers University of Technology, Gothenburg, Sweden*

**CW-11**. **Modeling and Simulation of Power Transformer for the Design of Residual Flux Detection.** *W. Ge*[1] and Y. Wang[2] *1. School of Control and Mechanical Engineering, Tianjin Chengjian University, Tianjin, China; 2. Hebei University of Technology, Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Tianjin, China*

**CW-12**. **Electromotive Force Analysis of Current Transformer during Lightning Surge Inflow using Fourier Series Expansion.** *Y. Kim*[1] and K. Lee[1] *1. Department of Electrical and Electronic Engineering, Joongbu University, Goyang, The Republic of Korea*

**CW-13**. **Reactor Vibration Reduction Based on Giant Magnetostrictive Materials.** *R. Yan*[1], W. Liu[1], Y. Wu[1], M. Duan[1], X. Zhang[1] and L. Zhu[2] *1. Hebei University of Technology, Tianjin, China; 2. Tianjin Polytechnic University, Tianjin, China*

**CW-14**. **Push-Button Rotational Electromagnetic Energy Harvesting System.** *D. Dinulovic*[1], M. Shousha[1], M. Brooks[1], M. Haug[1] and T. Petrovic[2] *1. R&D, Würth Elektronik eiSos, Garhing, Germany; 2. Faculty of Mechanical Engineering, University of Niš, Niš, Serbia*

**CW-15**. **Three-Phase Transformer Core Magnetism dependent on Stress Dissipation by using Angle-Shaped Forming Method: A Case Study.** *C. Hsu*[1,2], Y. Huang[2] and M. Hsieh[3] *1. Research and Development Center, Fortune Electric Company, Chung-Li, Taiwan; 2. Department of Mechanical Engineering, National Central University, Chung-Li, Taiwan; 3. National Cheng Kung University, Tainan, Taiwan*

WEDNESDAY AFTERNOON 1:30 — MARDI GRAS A-E

## Session DA
# SYMPOSIUM: VOLTAGE-CONTROLLED SPINTRONICS FOR NANOELECTRONICS BEYOND MOORE'S LAW

Brian Kirby, Chair
NIST, Gaithersburg, MD

**1:30**

**DA-01**. **Voltage-Driven Magnetization Control in Topological Insulator/Magnetic Insulator Heterostructures.** ***(Invited)*** *M.E. Flatte*[1] *1. Physics, University of Iowa, Iowa City, IA*

**2:06**

**DA-02**. **Mechanisms of Electric Field Control of Spin-Orbit Phenomena at Ferromagnet/Nonmagnet Interfaces: Perpendicular Magnetic Anisotropy and Dzyaloshinskii-Moriya Interaction.** ***(Invited)*** H. Yang[1,2], F. Ibrahim[1], A. Hallal[1], B. Diény[1], O. Boulle[1], V. Cros[2], A. Fert[2] and *M. Chshiev*[1] *1. SPINTEC, UMR 8191 Univ. Grenoble Alpes, CNRS, CEA-INAC, Grenoble, France; 2. Unité Mixte de Physique CNRS, Thales, Univ. Paris-Sud, Univ. Paris-Saclay, Palaiseau, France*

**2:42**

**DA-03**. **Beyond the Interface: Structural and Magnetic Depth Profiles of Magneto-Ionic Heterostructures.** ***(Invited)*** *D.A. Gilbert*[1], A. Grutter[1], E. Arenholz[2], B.J. Kirby[1], J. Borchers[1] and B.B. Maranville[1] *1. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD; 2. LBNL, Berkeley, CA*

**3:18**

**DA-04**. **Voltage control of platinum orbit: contribution to interfacial magnetic anisotropy change.** ***(Invited)*** *S. Miwa*[1,6], M. Suzuki[2], M. Tsujikawa[3,7], K. Matsuda[1], T. Nozaki[4], K. Tanaka[1], M. Goto[1,6], Y. Kotani[2], T. Ohkubo[5], F. Bonell[1], K. Hono[5], T. Nakamura[2], M. Shirai[3,7] and Y. Suzuki[1,6] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Japan Synchrotron Radiation Research Institute (JASRI), Sayo, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 4. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 5. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan; 6. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan; 7. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

**3:54**

**DA-05**. **Voltage controlled interlayer coupling in perpendicular magnetic tunnel junctions.** ***(Invited)*** *W. Wang*[1] *1. Department of Physics, University of Arizona, Tucson, AZ*

WEDNESDAY AFTERNOON 1:30 — MARDI GRAS F-H

## Session DB
# MAGNONICS II
Helmut Schultheiss, Chair
Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany

**1:30**

**DB-01**. **Electrically Driven Magnetization Dynamics In Yttrium Iron Garnet.** ***(Invited)*** *M. Jungfleisch*[1], W. Zhang[1], J. Sklenar[1,3], W. Jiang[1], J. Ding[1], H. Chang[2], F.Y. Fradin[1], S.M. Wu[1], J.E. Pearson[1], A. Bhattacharya[1], J.B. Ketterson[3], V. Novosad[1], M. Wu[2] and A. Hoffmann[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Department of Physics, Colorado State University, Fort Collins, CO; 3. Physics and Astronomy, Northwestern University, Evanston, IL*

2:06

**DB-02**. **Reconfigurable nano-scale spin-wave directional coupler.** *A. Chumak*[1], Q. Wang[1], P. Pirro[1], B. Hillebrands[1], R.V. Verba[2] and A.N. Slavin[3] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Institute of Magnetism, Kyiv, Ukraine; 3. Department of Physics, Oakland University, Rochester Hills, MI*

2:18

**DB-03**. **A three-input spin wave interferometer using yttrium iron garnet.** *N. Kanazawa*[1], T. Goto[1,2], K. Sekiguchi[3,2], A.B. Granovsky[4], C.A. Ross[5], H. Takagi[1], Y. Nakamura[1], H. Uchida[1] and M. Inoue[1] *1. Department of Electrical and Electronic Information Engineering, Toyohashi University of Technology, Toyohashi, Japan; 2. PRESTO, JST, Kawaguchi, Japan; 3. Department of Physics, Keio University, Yokohama 223-8522, Japan; 4. Faculty of Physics, Moscow State University, Leninskie Gory, Russian Federation; 5. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

2:30

**DB-04**. **Observation of Envelope Dispersive Shock Waves in Yttrium Iron Garnet Thin Films.** *P.A. Janantha*[1], M. Hoefer[2] and M. Wu[1] *1. Department of Physics, Colorado State University, Fort Collins, CO; 2. Applied Mathematics, University of Colorado, Boulder, Boulder, CO*

2:42

**DB-05**. **Stabilization of a Bose-Einstein condensate of magnons through interaction of two condensates with opposite wave vectors.** O. Dzyapko[1], P. Nowik-Boltyk[1], V.E. Demidov[1], S. Demokritov[1,2], B. Koene[3], A. Kirilyuk[3], J. Jersch[1], T. Rasing[3], *I. Lisenkov*[4,5], V. Tyberkevych[4] and A.N. Slavin[4] *1. Institute for Applied Physics and Center for Nanotechnology, University of Muenster, Muenster, Germany; 2. Institute of Metal Physics, Ural Division of RAS, Yekaterinburg, Russian Federation; 3. Institute for Molecules and Materials, Radboud University Nijmegen, Nijmegen, Netherlands; 4. Department of Physics, Oakland University, Rochester, MI; 5. Kotelnikov Institute for Radioengineering and Electronics, Moscow, Russian Federation*

2:54

**DB-06**. **Stabilization of spin wave amplitude by parametric pumping in ferromagnetic nanowires.** *R.V. Verba*[1], V. Tyberkevych[2] and A.N. Slavin[2] *1. Institute of Magnetism, Kyiv, Ukraine; 2. Department of Physics, Oakland University, Rochester, MI*

**3:06**

**DB-07**. **Magnetic droplet nucleation boundary in orthogonal nano-contact spin-torque oscillator.** *S. Chung*[1,2], A. Eklund[3], E. Iacocca[4,5], S.M. Mohseni[6], S. Redjai Sani[2], L. Bookman[7], M. Hoefer[4], R.K. Dumas[1] and J. Åkerman[1,8] *1. Department of Physics, University of Gothenburg, 412 96 Gothenburg, Sweden; 2. Department of Physics and Astronomy, Uppsala University, 751 20 Uppsala, Sweden; 3. Integrated Devices and Circuits, School of ICT, KTH-Royal Institute of Technology, Stockholm, Sweden; 4. Department of Applied Mathematics, University of Colorado, Boulder, CO; 5. Department of Physics, Division for theoretical physics, Chalmers University of Technology, 412 96, Gothenburg, Sweden; 6. Department of Physics, Shahid Beheshti University, Tehran 19839, The Islamic Republic of Iran; 7. Department of Mathematics, Yale University, New Haven, CT; 8. Department of Materials and Nano Physics, School of ICT, KTH-Royal Institute of Technology, Stochholm, Sweden*

**3:18**

**DB-08**. **Anderson localization of spin waves in chiral magnets in momentum space: coherent back- and forward scattering.** *M. Evers*[1], C. Müller[1] and U. Nowak[1] *1. Physics Department, University of Konstanz, Konstanz, Germany*

**3:30**

**DB-09**. **Withdrawn**

**3:42**

**DB-10**. **Spin Nernst Effect of Magnons in Collinear Antiferromagnets.** *R. Cheng*[1], S. Okamoto[2] and D. Xiao[1] *1. Physics, Carnegie Mellon University, Pittsburgh, PA; 2. Oak Ridge National Laboratory, Oak Ridge, TN*

**3:54**

**DB-11**. **Resonant Optical Excitation of Ultrafast Magnetization Dynamics in Iron Garnets by a Sequence of Optical Pulses.** *M. Jäckl*[1], V.I. Belotelov[2,3], I. Akimov[1,4], I. Savochkin[2], D. Yakovlev[1,4], A. Zvezdin[3] and M. Bayer[1,4] *1. Technical University Dortmund, Dortmund, Germany; 2. Lomonosov Moscow State University, Moscow, Russian Federation; 3. Russian Quantum Center, Skolkovo, Russian Federation; 4. Ioffe Institute, Russian Academy of Sciences, St. Petersburg, Russian Federation*

**4:06**

**DB-12**. **Propagating spin-wave generated by a focused pulse laser in NiFe films.** S. Iihama[1], Y. Sasaki[2,1], A. Sugihara[2], A. Kamimaki[2,1], Y. Ando[1] and *S. Mizukami*[2] *1. Dept. Appl. Phys., Tohoku University, Sendai, Japan; 2. WPI-AIMR, Tohoku University, Sendai, Japan*

4:18

**DB-13**. **Spin-Wave Mode Conversion via Optically Induced Landscapes of the Saturation Magnetization.** *M. Vogel*[1], R. Aßmann[1], A. Chumak[1], B. Hillebrands[1] and G. von Freymann[1,2] *1. Physics Department and State Research Center OPTIMAS, TU Kaiserslautern, Kaiserslautern, Germany; 2. Institute for Physical Measurement Techniques IPM, Fraunhofer-Institute, Kaiserslautern, Germany*

WEDNESDAY AFTERNOON 1:30 — LA GALERIES 1-2

## Session DC
# SPIN PUMPING AND RELATED EFFECTS
William Bailey, Chair
Columbia Univeristy, New York, NY

1:30

**DC-01**. **Unidirectional spin Hall magnetoresistance in ferromagnet/ normal metal bilayers.** ***(Invited)*** *C. Avci*[1], K. Garello[1], A. Ghosh[1], M. Gabureac[1], S.F. Alvarado[1] and P. Gambardella[1] *1. Department of Materials, ETH Zürich, Zürich, Switzerland*

2:06

**DC-02**. **Spin pumping-inverse spin Hall effect: Essential role of magnetization precession cone angle.** *S. Gupta*[1], R. Medwal[1], D. Kodama[1], K. Kondou[2], Y. Otani[2,3] and Y. Fukuma[1,2] *1. Frontier Research Academy for Young Researchers, Kyushu Institute of Technology, Iizuka, Japan; 2. RIKEN-CEMS, Wako, Japan; 3. ISSP, University of Tokyo, Kashiwa, Japan*

2:18

**DC-03**. **Interface effects at Pt/ferromagnetic insulator bilayers probed by spin Hall magnetoresistance and magnon excitations.** S. Velez[1], M. Isasa[1], E. Sagasta[1], J.M. Gomez-Perez[1], A. Bedoya-Pinto[1], W. Yan[1], N. Dix[4], F. Sanchez[4], J. Fontcuberta[4], F. Rivadulla[5], C. Bui[5], L.E. Hueso[1,3] and *F. Casanova*[1,3] *1. CIC nanoGUNE, Donostia-San Sebastian, Spain; 3. IKERBASQUE, Bilbao, Spain; 4. Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Bellaterra, Spain; 5. Centro de Investigación en Química Biológica y Materiales Moleculares (CIQUS), Universidad de Santiago de Compostela, Santiago de Compostela, Spain*

2:30

**DC-04**. **Interfacial Fe in the Transport of YIG/Metal Bilayers.** *A.L. Westerman*[1], M. Ali[1], L. Banniard[2,1] and B. Hickey[1] *1. School of Physics & Astronomy, University of Leeds, Castleford, United Kingdom; 2. Phelma Grenoble INP, Grenoble, France*

**2:42**

**DC-05**. **Spin Mixing Conductance Enhancement by NiFe Insertion at YIG/Pt Interface.** *H. Yuasa*[1,2], K. Tamae[1] and N. Onizuka[1] *1. Graduate School and Faculty of Information Science and Electrnical Engineering, Kyushu University, Fukuoka, Japan; 2. PRESTO, Japan Science and Technology Agency, Kawaguchi, Japan*

**2:54**

**DC-06**. **Spin mixing conductance in epitaxial and polycrystalline FM/Pt,Ta bilayers (FM= Fe, CoFeB).** *A. Conca*[1,2], S. Keller[1,2], T. Kehagias[3], G. Dimitrakopulos[3], B. Hillebrands[1] and E. Papaioannou[1,2] *1. Physics, TU Kaiserslautern, Kaiserslautern, Germany; 2. Landesforschungszentrum OPTIMAS, Kaiserslautern, Germany; 3. Physics Department, Aristotle University of Thessaloniki, Thessaloniki, Greece*

**3:06**

**DC-07**. **The role of magnetic anisotropy on spin pumping revealed in epitaxial Fe/NM (Pt, Pd, Au) systems.** *S. Keller*[1], M.R. Schweizer[1], J. Greser[1], D. Karfaridis[2], L. Mihalceanu[1], G. Vourlias[2], A. Conca[1], B. Hillebrands[1] and E. Papaioannou[1] *1. Fachbereich Physik and Landesforschungszentrum OPTIMAS, Technische Universität Kaiserslautern, Kaiserslautern, Germany; 2. Physics Department, Aristotle University of Thessaloniki, Thessaloniki, Greece*

**3:18**

**DC-08**. **Spatial symmetry of spin pumping and inverse spin Hall effect in Pt/$Y_3Fe_5O_{12}$ system.** X. Fan[1], *H. Zhou*[1], L. Ma[2], S. Zhou[2] and X.D. Sheng[1] *1. Lanzhou University, Lanzhou, China; 2. Physics, Tongji University, Shanghai, China*

**3:30**

**DC-09**. **Temperature Dependent Spin Hall Magnetoresistance in Pt/$Fe_3O_4$/MgO/Ta Multilayered Structures.** T. Pham[1], N. Lee[1], Y. Bae[1], K. Kang[2], E. Park[4], A. Michel[3] and *T. Kim*[1] *1. Department of Physics, Ewha Womans University, Seoul, The Republic of Korea; 2. Department of Materials Science and Engineering, Hanyang University, Seoul, The Republic of Korea; 3. Physique et Mécanique des Matériaux, CNRS-Université de Poitiers-ENSMA, Futuroscope-Chasseneuil, France; 4. KU-KIST Graduate School of Converging Science and Technology, Korea University, Seoul, The Republic of Korea*

**3:42**

**DC-10**. **Intrinsic Spin Hall conductivity of Pt probed by its Spin-Hall magnetoresistance in Pt/[NiCo] multilayers.** *H. Jaffrès*[1], P. Laczkowski[1], S. Collin[1], N. Reyren[1], L. Vila[2] and J. George[1] *1. Unité Mixte de Physique CNRS Thales, CNRS, Palaiseau, France; 2. SPINTEC, CEA, Grenoble, France*

**3:54**

**DC-11**. **Spin Pumping in $La_{2/3}Sr_{1/3}MnO_3$/$SrRuO_3$ Bilayers Probed by Broadband Ferromagnetic Resonance Spectroscopy.** *S. Emori*[1] and Y. Suzuki[2] *1. Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA; 2. Applied Physics, Stanford University, Stanford, CA*

**4:06**

**DC-12**. **Low Damping Spinel Ferrites for Spin Pumping.** *M.T. Gray*[1,2], S. Emori[2], B.A. Gray[3], H. Jeon[3,4], B.M. Howe[3] and Y. Suzuki[2,5] *1. Materials Science and Engineering, Stanford University, Stanford, CA; 2. Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA; 3. Materials and Manufacturing Directorate, Air Force Research Laboratory, Dayton, OH; 4. Electrical Engineering, Wright State University, Dayton, OH; 5. Applied Physics, Stanford University, Stanford, CA*

**4:18**

**DC-13**. **Current-Induced Switching in a Magnetic Insulator.** *C. Avci*[1], A. Quindeau[1], C. Pai[1], M. Mann[1], L.M. Caretta[1], A. Tang[1], M. Onbasli[1], C.A. Ross[1] and G. Beach[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

WEDNESDAY AFTERNOON 1:30 — LA GALERIES 3

## Session DD
# DOMAIN WALL, VORTEX AND SKYRMION DYNAMICS II

Suzanne G.E. te Velthuis, Chair
Argonne National Laboratory, Argonne, IL

**1:30**

**DD-01**. **Field-Driven Domain Wall Dynamics In Soft Cylindrical Nanowires.** *A. Wartelle*[1], C. Thirion[1], B. Trapp[1], S. Bochmann[3], J. Bachmann[3], M. Foerster[4], L. Aballe[4], A. Sala[5], T. Mentes[5], A. Locatelli[5], J. Toussaint[1] and O. Fruchart[2] *1. Institut Néel, CNRS, Grenoble, France; 2. SPINTEC, CNRS, Grenoble, France; 3. Friedrich-Alexander Universität, Erlangen, Germany; 4. Alba Synchrotron Light Facility, CELLS, Barcelona, Spain; 5. Elettra – Sincrotrone Trieste S.C.p.A, Trieste, Italy*

**1:42**

**DD-02**. **Very large domain wall velocities in Pt/Co/Gd and Pt/Co/GdOx trilayers with strong Dzyaloshinskii-Moriya interaction.** *S. Pizzini*[1], J. Vogel[1], J. Sampaio[2], J. Rojas-Sanchez[1], M. Bonfim[3], D. Chaves[1], T. Pham[1] and A. Thiaville[2] *1. Institut Néel, CNRS, Grenoble, France; 2. Lab. Physique des Solides, Universite Paris-Sud, Orsay, France; 3. Universidade Federal do Paranà, Departamento de Engenharia Elétrica, Curitiba, Brazil*

**1:54**

**DD-03**. **Current indiced domain wall propagtion in Co-rich amorphous microwires.** V. Zhukova[1,3], J. Blanco[3], A. Chizhik[1,3], M. Ipatov[1,3] and *A.P. Zhukov*[1,2] *1. Dept. Phys. Mater., UPV/EHU, San Sebastián, Spain; 2. Ikerbasque, Bilbao, Spain; 3. Dept. Appl. Phys., University of Basque Country, San Sebastian, Spain*

**2:06**

**DD-04**. **Formation and stability of individual skyrmions in confined geometries.** ***(Invited)*** *H. Du*[1] *1. High Magnetic Field Lab Hefei Institutes of Physical Sciences, CAS, HeFei, China*

**2:42**

**DD-05**. **Domain wall dynamics by non-local thermal gradients.** *S. Moretti*[1], V. Raposo[1] and E. Martinez[1] *1. Departamento de Fisica Aplicada, Universidad de Salamanca, Salamanca, Spain*

**2:54**

**DD-06**. **Spatially Localized Excitations in Antiferromagnets Driven by Spin Current.** B. Ivanov[1,2], E. Galkina[3], *R. Khymyn*[4], V. Tyberkevych[4] and A.N. Slavin[4] *1. Institute of Magnetism, National Academy of Science of Ukraine, Kyiv, Ukraine; 2. Taras Shevchenko National University, Kyiv, Ukraine; 3. Institute of Physics, National Academy of Science of Ukraine, Kyiv, Ukraine; 4. Department of Physics, Oakland University, Rochester, MI*

**3:06**

**DD-07**. **Coupling of high frequency strain and azimuthal spin wave modes in Magnetostrictive Nanostructures.** T.A. Ostler[1] and *S.A. Cavill*[2] *1. L'Université de Liège, Liege, Belgium; 2. Physics, University of York, York, United Kingdom*

**3:18**

**DD-08**. **Magnetoelectric domain wall dynamics and its implications for magnetoelectric memory.** *K. Belashchenko*[1], O. Tchernyshyov[2], A. Kovalev[1] and O. Tretiakov[3,4] *1. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE; 2. Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD; 3. Tohoku University, Sendai, Japan; 4. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation*

**3:30**

**DD-09**. **Mechanism of all-optical control of ferromagnetic multilayers with circularly polarized light.** *R. Medapalli*[1], D. Afanasiev[3], D. Kim[1], Y. Quessab[1,2], S. Manna[1], S.A. Montoya[1], A. Kirilyuk[3], T. Rasing[3], A. Kimel[3] and E.E. Fullerton[1] *1. Center for Recording Research, University of California San Diego, La Jolla, CA; 2. Universite de Lorraine, Institut Jean Lamour, Nancy, France; 3. Radboud University Nijmegen, Institute for Molecules and Materials, Heyendaalseweg 135, 6525 AJ Nijmegen, Nijmegen, Netherlands*

**3:42**

**DD-10**. **Probing Two Dipolar-coupled Spin-transfer Vortex Oscillators With External Microwave Field.** *Y. Li*[1], F. Abreu Araujo[2], X. de Milly[1], O. Klein[3], V. Cros[2], J. Grollier[2] and G. de Loubens[1] *1. Service de Physique de l'Etat Condensé, CEA Saclay, Saclay, France; 2. Unité Mixte de Physique, CNRS/Thales, Paris, France; 3. Spintec, CEA Grenoble, Grenoble, France*

**3:54**

**DD-11**. **Spin-Hall Effect Driven Magnetic Domain Wall Motion under the Application of In-plane Fields in PMA Nanowires.** *S. Nasseri*[1,5], E. Martinez[4], C. Serpico[2] and G. Durin[3,1] *1. ISI Foundation, Torino, Italy; 2. University of Naples, Napoli, Italy; 3. Nanoscience and Material, Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 4. Fisica Aplicada, Universidad de Salamanca, Salamanca, Spain; 5. Politecnico di Torino, Torino, Italy*

**4:06**

**DD-12**. **Theory of Magnon Motive Force in Chiral Ferromagnets.** *A. Kovalev*[1] and U. Gungordu[1] *1. Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE*

**4:18**

**DD-13**. **Over 10 μW emission power in a vortex-type spin torque oscillator.** *S. Tsunegi*[1], K. Yakushiji[1], A. Fukushima[1], S. Yuasa[1] and H. Kubota[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Palaiseau, France*

WEDNESDAY AFTERNOON 1:30 — LA GALERIES 4-5

## Session DE
# INTERFACIAL DMI AND SPIN-ORBIT TORQUES

Luqiao Liu, Chair
MIT, Cambridge, MA

**1:30**

**DE-01**. **Control of spin-orbit torques through crystal symmetry in $WTe_2$/ferromagnet bilayers.** *G.M. Stiehl*[1], D. MacNeill[1], M.H. Guimaraes[1,2], R. Buhrman[1], J. Park[1,2] and D. Ralph[1,2] *1. Cornell University, Ithaca, NY; 2. Kavli Institute at Cornell for Nanoscale Science, Ithaca, NY*

**1:42**

**DE-02**. **Strongly enhanced valley splitting in monolayer transition metal dichalcogenides due to magnetic exchange field.** C. Zhao[1], T. Scrace[1], P. Zhao[2], Y. Cheng[2], P. Taheri[1], P. Zhang[1], G. Miao[3], R. Sabirianov[4], A. Petrou[1] and *H. Zeng*[1] *1. Physics, University at Buffalo, SUNY, Buffalo, NY; 2. Physics, Nanjing Tech University, Nanjing, China; 3. Institute for Quantum Computing, University of Waterloo, Waterloo, ON, Canada; 4. Physics, University of Nebraska-Omaha, Omaha, NE*

**1:54**

**DE-03**. **Strong Rashba-Edelstein Effect-Induced Spin-Orbit Torques in Monolayer Transition Metal Dichalcogenides/ Ferromagnet Bilayers.** *Q. Shao*[1], G. Yu[1], Y. Lan[1], Y. Shi[2], M. Li[2], C. Zheng[1], L. Li[2], P. Khalili[1] and K.L. Wang[1] *1. Electrical engineering, UCLA, Los Angeles, CA; 2. Physical Sciences and Engineering Division, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia*

**2:06**

**DE-04**. **Large Spin Orbit Torques Originated From $Bi_2Se_3$/Ag Interface.** *S. Shi*[1], Y. Wang[1] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

**2:18**

**DE-05**. **Band structure and spin texture of $Bi_2Se_3$/3d ferromagnetic metal interface.** *J. Zhang*[1], J. Velev[2,1], X. Dang[1] and E.Y. Tsymbal[1] *1. Department of Physics and Astronomy, University of Nebraska, Lincoln, NE; 2. Department of Physics and Astronomy, University of Puerto Rico, San Juan, PR*

**2:30**

**DE-06**. **Influence of oxygen coverage on the Dzyaloshinskii-Moriya interaction in CoFe/Pt bilayers.** *H. Nembach*[1,2], E.R. Evarts[1], E. Jué[1] and J. Shaw[1] *1. National Institute of Standards and Technology, Boulder, CO; 2. JILA, University of Colorado, Boulder, CO*

**2:42**

**DE-07**. **Enhancement of voltage induced interfacial Dzyaloshinskii-Moriya interaction at Fe|MgO by one monolayer insertion of Pt.** *K. Nawaoka*[1], S. Miwa[1], T. Nozaki[2], M. Goto[1], E. Tamura[1], S. Yuasa[2] and Y. Suzuki[1] *1. Graduate School of Engineering Science, Osaka University, Osaka, Japan; 2. Spintronics Research Center, AIST, Tsukuba, Japan*

**2:54**

**DE-08**. **Coupling Of Coexisting Non-Collinear Spin States In The Fe Monolayer On Re(0001).** *A. Palacio Morales*[1], A. Kubetzka[1], K. von Bergmann[1] and R. Wiesendanger[1] *1. Institute of Applied Physics and Interdisciplinary Nanoscience Center Hamburg, Hamburg University, Hambug, Germany*

**3:06**

**DE-09**. **Spin-orbit torques at ferromagnet/oxide interface.** *A. Mouillon*[1], M. Drouard[1], L. Cuchet[1], B. Rodmacq[1], S. Auffret[1], I. Miron[1], O. Boulle[1] and G. Gaudin[1] *1. SPINTEC, Univ. Grenoble Alpes/CNRS/CEA-INAC, Grenoble, France*

**3:18**

**DE-10**. **Effects of Interlayer Coupling in Ultrathin Multilayer Films with Interfacial DMI.** *J.F. Pulecio*[1], A. Hrabec[2], K. Zeissler[3], Y. Zhu[4] and C.H. Marrows[3] *1. Quantum Electromagnetics Division, National Institute of Standards and Technology, Boulder, CO; 2. LPS, CNRS, Orsay, France; 3. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 4. Brookhaven Nat.l Lab, Upton, NY*

**3:30**

**DE-11**. **Dzyaloshinskii-Moriya interaction and the magnetic chirality in 3*d*/5*d* interfaces.** *A. Belabbes*[1], G. Bihlmayer[2], F. Bechstedt[3], S. Blügel[2] and A. Manchon[1] *1. Physical Science and Engineering Division, King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia; 2. Peter Grünberg Institut and Institute for Advanced Simulation, Forschungszentrum Jülich, Jülich, NRW, Germany, Jülich, Germany; 3. Institut für Festkörpertheorie und -optik. Friedrich-Schiller-Universität Jena, Jena, Germany*

**3:42**

**DE-12**. **Spin-Orbit Torque Studies In Hf/CoFeB/MgO as a Function of Hf Thickness.** *R. Ramaswamy*[1], X. Qiu[1], T. Dutta[1], S. Pollard[1] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

**3:54**

**DE-13**. **Anisotropic Dzyaloshinskii-Moriya Interaction in Ultra-thin Epitaxial Au/Co/W(110).** L. Camosi[1], O. Fruchart[2,1], S. Pizzini[1], M. Belmeguenai[3], S. Rohart[4], Y. Roussigné[3], H. Yang[2], M. Chshiev[2], A. Stashkevich[3], S.M. Chérif[3] and *J. Vogel*[1] *1. Institut Néel, CNRS/Univ. Grenoble Alpes, Grenoble, France; 2. SPINTEC, CEA/CNRS/Univ. Grenoble Alpes, Grenoble, France; 3. LSPM, University Paris 13, Villetaneuse, France; 4. Université Paris-Sud, Orsay, France*

**4:06**

**DE-14**. **Thickness dependence of Dzyaloshinskii-Moriya interaction and spin-orbit torques in $AlO_x$.** *R. Lo Conte*[1,2], E. Martinez[3], G. Vijay Karnad[1], K. Lee[1], N. Kim[1,4], D. Han[5], J. Kim[5], T. Schulz[1], C. You[4], H. Swagten[5] and M. Kläui[1,2] *1. Department of Physics, Johannes Gutenberg - University Mainz, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz (MAINZ), Mainz, Germany; 3. Fisica Aplicada, Universidad de Salamanca, Salamanca, Spain; 4. Daegu Gyeongbuk Institute of Science and Technology (DGIST), Daegu, The Republic of Korea; 5. Department of Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands*

**4:18**

**DE-15**. **Observation of DMI and Skyrmions in Pt/Co/Os/Pt thin films.** *R.D. Tolley*[1], S.A. Montoya[1], T. Hennen[1] and E.E. Fullerton[1] *1. Center for Memory and Recording Research, University of California San Diego, La Jola, CA*

## Session DF
# 2D AND 3D NANOSTRUCTURED ARRAYS I
Nicoleta Lupu, Chair
National Institute of Research and Development for Technical Physics, Iasi, Romania

**1:30**

**DF-01**. **Potential dependent Tuning of magnetic and structural properties of electrodeposited NiZn nanowires in $Al_2O_3$ templates.** *N. Ahmad*[1,2], S. Ghumen[2], L. Wenjing[1], S. Khan[2], S.A. Shah[3], S.U. Awan[4], J. Iqbal[5], A. Majid[6] and X. Han[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Department of Physics, International Islamic University, Islamabd, Pakistan; 3. Materials Science & Engineering, University of Washington, Seattle WA, USA, Seattle, WA; 4. Physics, COMSATS Institute Of Information Technology, Islamabad, Pakistan, Islamabad, Pakistan; 5. Physics, Quaid-i-azam University, Islamabd, Pakistan; 6. Physics, University of Gujrat, Gujrat, Pakistan*

**1:42**

**DF-02**. **Controlled Electrodeposition of $Co_{35}Fe_{65}$ Nanowires with the Highest Magnetic Saturation for Biomedical Applications.** *A. Ghemes*[1], O. Dragos[1], H. Chiriac[1], N. Lupu[1], M. Grigoras[1], D. Shore[2], B. Stadler[2] and I. Tabakovic[2] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. ECE Department, University of Minnesota, Minneapolis, MN*

**1:54**

**DF-03**. **Pushing Forward Electrodeposited Magnetic Nanowires: Trying to Pin Domain Walls.** L.A. Costa Arzuza[1], D. Salazar-Aravena[1], V. Vega[2], V.M. de la Prida[2], *F. Béron*[1] and K.R. Pirota[1] *1. Universidade Estadual de Campinas, Campinas, Brazil; 2. Universidad de Oviedo, Oviedo, Spain*

**2:06**

**DF-04**. **Wafer Scale Growth of Aligned Co Nanowires and Their Magnetic Properties.** *J. Mohapatra*[1], K.H. Gandha[1], K. Elkins[1], N. Poudyal[1] and P. Liu[1] *1. Physics, University of Texas at Arlington, Arlington, TX*

**2:18**

**DF-05**. **High Quality Magnetic Nanofibers Composites for RF applications.** *X. Chen*[1], Z. Zhou[1] and G. Grocke[1] *1. Energy Systems Division, Argonne National Laboratory, Lemont, IL*

**2:30**

**DF-06**. **Tailoring the Supermagnetic Order in Arrays of Dipolarly Coupled Nanomagnets.** *S. Sloetjes*[1], H. Urdahl[1], J.K. Grepstad[1] and E. Folven[1] *1. Department of Electronics and Telecommunications, NTNU, Trondheim, Norway*

**2:42**

**DF-07**. **Nonlinear response of classical nanoparticles: Equilibrium and dynamical.** *R. Lopez-Ruiz*[1], F. Luis[3], J. Bartolome[3], C. Deranlot[2] and F. Petroff[2] *1. Universidade Estadual de Campinas (UNICAMP), Campinas, Brazil; 2. UMPhy CNRS/Thales, Palaiseau, France; 3. Instituto de Ciencia de Materiales de Aragón - CSIC - Universidad de Zaragoza, Zaragoza, Spain*

**2:54**

**DF-08**. **Three-Dimensional Magnetic Vortices in Cobalt Nanospheres.** *M. Urbanek*[1,3], O. Vyroubal[3], M. Kolibal[1,3], L. Flajsman[1], M. Vanatka[1], T.V. Ashworth[2] and T. Sikola[1,3] *1. CEITEC BUT, Brno University of Technology, Brno, Czech Republic; 2. NanoScan AG, Duebendorf, Switzerland; 3. Institute of Physical Engineering, Brno University of Technology, Brno, Czech Republic*

**3:06**

**DF-09**. **Enhanced coercivity in Co-doped $\alpha$-$Fe_2O_3$ cubic shaped nanocrystals assemblies synthesized via a magnetic field-assisted hydrothermal approach.** *K.H. Gandha*[1], J. Mohapatra[1], N. Poudyal[1], K. Elkins[1] and P. Liu[1] *1. Physics, University of Texas at Arlington, Arlington, TX*

**3:18**

**DF-10**. **Three-dimensional magneto-optic spatial light modulator with artificial magnetic lattice.** ***(Invited)*** *H. Takagi*[1], K. Nakamura[1], T. Goto[1,2], Y. Nakamura[1], P. Lim[1], H. Uchida[1] and M. Inoue[1] *1. Toyohashi University of Technology, Toyohashi, Japan; 2. JST, PRESTO, Kawaguchi, Japan*

**3:54**

**DF-11**. **3D Printing of Polymer Bonded Rare-Earth Magnets With a Variable Magnetic Compound Density for a Predefined Stray Field.** *C. Huber*[1], C. Abert[1], F. Bruckner[1], M. Groenefeld[2], S. Schuschnigg[3], I. Teliban[2], G. Wautischer[1] and D. Suess[1] *1. Institute of Solid State Physics, Christian Doppler Laboratory for Advanced Magnetic Sensing and Materials, Vienna University of Technology, Vienna, Austria; 2. Magnetfabrik Bonn GmbH, Bonn, Germany; 3. Montanuniversitaet Leoben, Leoben, Austria*

**4:06**

**DF-12**. **Highly-tunable Magnetic Properties In Novel $Cu_{1-x}Ni_X$ Architectures: From Fully Dense Films To Patterned Pillars And Micro-/nanoporous Structures.** *A. Quintana Puebla*[1], J. Zhang[1], A. Varea[2], S. Pané[3], E. Pellicer[1] and J. Sort[1,4] *1. Physics, Universitat Autonoma de Barcelona, Bellaterra, Spain; 2. Engineering: Electronics, Universitat de Barcelona, Barcelona, Spain; 3. ETH Zurich, Zürich, Switzerland; 4. Catalan Institution for Research and Advanced Studies (ICREA), Barcelona, Spain*

**4:18**

**DF-13**. **3D Magnetic Nanowires: Fabrication and Advanced Magnetic Characterization.** *D. Sanz-Hernández*[1], J. Pablo-Navarro[4,6], L. Serrano-Ramón[4,6], C. Magén[4,5], R. Streubel[2], M. Im[3], J. De Teresa[4,6], P. Fischer[2] and A. Fernandez-Pacheco[1] *1. University of Cambridge, Cambridge, United Kingdom; 2. LBNL, Berkeley, CA; 3. CXRO, Lawrence Berkeley National Laboratory, Berkeley, CA; 4. Laboratorio de Microscopías Avanzadas (LMA), Zaragoza, Spain; 5. Departamento de Física de la Materia Condensada, Universidad de Zaragoza, Zaragoza, Spain; 6. Instituto de Ciencia de Materiales de Aragón (ICMA), Zaragoza, Spain*

WEDNESDAY AFTERNOON 1:30 — STUDIO 9-10

## Session DG
# MN- AND CO-BASED HIGH ANISOTROPY SYSTEMS
Cristina Bran, Chair
ICMM-CSIC, Madrid, Spain

**1:30**

**DG-01**. **Rare-earth free permanent magnets: screening and processing the (Mn,X)-Ga system.** *S. Ener*[1], J. Kroder[1], K.P. Skokov[1], D.Y. Karpenkov[1,2], M. Kuz'min[1] and O. Gutfleisch[1] *1. Functional Materials, Technische Universität Darmstadt, Darmstadt, Germany; 2. National University of Science & Technology "MISIS", Tver, Russian Federation*

**1:42**

**DG-02**. **Thickness dependence of orbital moments in tetragonally distorted FeCo thin films.** *N. Inami*[1], T. Ueno[2], T. Hasegawa[3], S. Ishio[3] and K. Ono[1] *1. Institute of Materials Structure Science, KEK, Tsukuba, Japan; 2. National Institute for Materials Science, Tsukuba, Japan; 3. Department of Materials Science and Engineering, Akita University, Akita City, Japan*

**1:54**

**DG-03**. **Withdrawn**

**2:06**

**DG-04**. **Preparation And Characterisation Of Compositionally Graded SmCo Films.** A. Dias[1], G. Gómez Eslava[1], S. Le Denmat[1], D. Givord[1,3], M. Bonfim[2] and *N. Dempsey*[1] *1. Institut NEEL - CNRS, Grenoble, France; 2. Universidade Federal do Paraná, Curitiba, Brazil; 3. Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil*

**2:18**

**DG-05**. **Exchange-Coupled Hard Magnetic Fe-Co/CoPt Nanocomposite Films Fabricated by Electro-Infiltration.** *X. Wen*[1] and D.P. Arnold[1] *1. Electrical and Computer Engineering, University of Florida, Gainesville, FL*

2:30

**DG-06**. **Structural and Magnetic Properties of MnPtGa Heusler thin film.** *R. Sahoo*[1], A.K. Nayak[1], B. Ernst[1], S. Selle[2], T. Hoeche[2] and C. Felser[1] *1. Inorganic Chemistry, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 2. Fraunhofer Institute for Mechanics of Materials IWM, Halle, Germany, Halle, Germany*

2:42

**DG-07**. **Magnetic and Structural Properties of $L1_0$ MnGa Epitaxial Thin Films on MgO(100) and $SrTiO_3$(100).** *S. Zhao*[1,2] and T. Suzuki[1,3] *1. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, AL; 2. Department of Metallurgical and Materials Engineering, University of Alabama, Tuscaloosa, AL; 3. Department of Metallurgical and Materials Engineering & Electrical and Computer Engineering, University of Alabama, Tuscaloosa, AL*

2:54

**DG-08**. **CaO Matrix Processing of MnBi Alloys for Permanent Magnets.** A. Gabay[1] and *G. Hadjipanayis*[1] *1. Physics and Astronomy, University of Delaware, Newark, DE*

3:06

**DG-09**. **Magnetic Properties and Structure of Low Temperature Phase MnBi with Islands Structure.** *M. Itoh*[1,4], Y. Tanaka[4], G. Mankey[1,3], R. Schad[1,3] and T. Suzuki[1,2] *1. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, AL; 2. Departments of Electrical and Computer Engineering, and Metallurgical and Materials Engineering, University of Alabama, Tuscaloosa, AL; 3. Department of Physics and Astronomy, University of Alabama, Tuscaloosa, AL; 4. Materials Development Center, Technology HQ, TDK Cooperation, Ichikawa, Japan*

3:18

**DG-10**. **Electronic Structures of Ferromagnetic $Mn_{0.5}TM_{0.5}Al$ Alloys (TM = Mn, Fe, and Co).** *M. Choi*[1], Y. Hong[1], J. Park[1], W. Lee[1], H. Won[1], C. Choi[2], W. Lee[3] and M. Jung[4] *1. Electrical and Computer Engineering and MINT Center, The University of Alabama, Tuscaloosa, AL; 2. Korea Institute of Materials Science, Changwon, The Republic of Korea; 3. Department of Materials Science and Engineering, Yonsei University, Seoul, The Republic of Korea; 4. Department of Physics, Sogang University, Seoul, The Republic of Korea*

3:30

**DG-11**. **The Phase Stability And Intrinsic Magnetic Properties Of MnAl Alloys Doped With Carbon.** *S. Zhao*[1], C. Jiang[1], J. Wang[2], T. Zhang[2] and J. Liu[2] *1. Beihang University, Beijing, China; 2. School of Materials Science and Engineering, Beihang University, Beijing, China*

3:42

**DG-12**. **Manipulation Of Morphology And Magnetic Properties In Cobalt Nanowires.** *C. Li*[1], Q. Wu[1], M. Yue[1], H. Xu[1], K. Elkins[2] and P. Liu[2] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China; 2. University of Texas-Arlington, Arlington, TX*

**3:54**

**DG-13**. **Magnetic Exchange Coupled MnAl/$Fe_{70}Co_{30}$ Bilayer.** *M. Choi*[1], Y. Hong[1], J. Park[1], W. Lee[1], H. Won[1], H. Lee[2], C. Choi[3] and G. Mankey[4] *1. Electrical and Computer Engineering and MINT Center, The University of Alabama, Tuscaloosa, AL; 2. National Institute for Materials Science, Tsukuba, Japan; 3. Korea Institute of Materials Science, Changwon, The Republic of Korea; 4. Department of Physics & Astronomy and MINT Center, The University of Alabama, Tuscaloosa, AL*

**4:06**

**DG-14**. **Phase Decompostion of Metastable $Co_3C$ Powders.** *M.S. Lucas*[1], Z. Turgut[2], J. Horwath[3] and E. Karapetrova[4] *1. RXCC, Air Force Research Laboratory, Wright-Patterson AFB, OH; 2. RQQM, AFRL, Wright-Patterson AFB, OH; 3. Air Force Research Laboratory, Wright-Patterson AFB, OH; 4. Advanced Photon Source, Argonne, IL*

WEDNESDAY AFTERNOON 1:30 — STUDIO 7-8

## Session DH
## COMPLEX OXIDES III: FILMS AND HETEROSTRUCTURES

Alpha N'Diaye, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA

**1:30**

**DH-01**. **Strong spin-orbit interaction on $SrTiO_3$ thin films on Si substrates.** *N. Theodoropoulou*[1], R.C. Cottier[1], D.A. Currie[1] and B.D. Koehne[1] *1. Physics, Texas State University, San Marcos, TX*

**1:42**

**DH-02**. **A Strain Mediated Ferromagnetic to Antiferromagnetic Transition in ESMO Thin Films.** *S.M. Disseler*[1], A. Grutter[1], E. Moon[2], D.A. Gilbert[1], E. Arenholz[3] and S. May[4] *1. NIST Center for Neutron Research, Gaithersburg, MD; 2. Drexel University, Philadelphia, PA; 3. LBNL, Berkeley, CA; 4. Materials Science and Engineering, Drexel University, Philadelphia, PA*

**1:54**

**DH-03**. **Current-induced modulation of switching magnetic field in $La_{0.67}Sr_{0.33}MnO_3/SrTiO_3$ structures.** *M. Yamanouchi*[1], T. Oyamada[2], T. Katase[1] and H. Ohta[1] *1. Research Institute for Electronic Science, Hokkaido University, Sapporo, Japan; 2. Department of Electronics and Information Engineering, School of Engineering, Hokkaido University, Sapporo, Japan*

**2:06**

**DH-04. Electric Field Effects of Spin Accumulation in Nb doped $SrTiO_3$ with $Ni/AlO_x$ as Spin Injection Contacts.** *A. Das*[1], A.M. Kamerbeek[1], A. Majumdar[1], A. Goossens[1] and T. Banerjee[2] *1. Zernike Institute for Advanced Materials, University of Groningen, Groningen, Netherlands; 2. University of Groningen, Groningen, Netherlands*

**2:18**

**DH-05. Disentangling strain and charge-mediated magnetoelectric effects in complex oxide-based artificial multiferroic heterostructures.** *R.V. Chopdekar*[1] and Y. Takamura[1] *1. Materials Science and Engineering, University of California - Davis, Davis, CA*

**2:30**

**DH-06. Voltage-induced tuning of magnetism in $La_{1-X}Sr_X MnO_3$ films by means of an ionic liquid.** *A. Molinari*[1], P.M. Leufke[1], C. Reitz[1], S. Dasgupta[1], R. Kruk[1] and H. Hahn[1] *1. Institute of Nanotechnology (INT), Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen (Karlsruhe), Germany*

**2:42**

**DH-07. Complete Suppression of Magnetism in $Gd/(LaSr)CoO_3$ Films via Redox Design of Oxygen Distributions.** *P. Murray*[1], D.A. Gilbert[2], A. Grutter[2], A. Ionin[3], R.V. Chopdekar[3], A.T. N'Diaye[4], B.J. Kirby[2], B.B. Maranville[2], Y. Takamura[3], E. Arenholz[4], K. Liu[1] and J. Borchers[2] *1. Physics Department, University of California, Davis, CA; 2. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD; 3. Department of Materials Science and Engineering, University of California, Davis, CA; 4. Advanced Light Source, Lawrence Berkeley National Lab, Berkeley, CA*

**2:54**

**DH-08. Complex Magnetic Interface Interactions at the (111)-oriented $La_{0.7}Sr_{0.3}MnO_3/LaFeO_3$ interface.** *I. Hallsteinsen*[1,2], M. Moreau[1], A. Grutter[3], D.A. Gilbert[3], A.T. N'Diaye[2], B.J. Kirby[3], E. Arenholz[2] and T. Tybell[1] *1. Dep. of Electronics and Telecommunications, NTNU - Norwegian University of Science and Technology, Trondheim, Norway; 2. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 3. NIST Center for Neutron Research, NIST, Gaithersburg, MD*

**3:06**

**DH-09. Interlayer Coupling-induced Distinct Spin Structure In The $[LaCoO_3/LaMnO_3]_5$ Superlattices.** *J. Zhang*[1], H. Zhang[1], X. Zhang[1], B. Liu[1] and J. Sun[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**3:18**

**DH-10**. **Controlling Emergent Ferromagnetism at Complex Oxide Interfaces.** ***(Invited)*** *A. Grutter*[1], A. Vailionis[6], B.J. Kirby[1], J. Borchers[1], C. He[2], E. Arenholz[3], M.T. Gray[5], U.S. Alaan[6], C. Flint[4] and Y. Suzuki[4] *1. NIST Center for Neutron Research, NIST, Gaithersburg, MD; 2. Materials Science and Engineering, University of California, Berkeley, CA; 3. LBNL, Berkeley, CA; 4. Stanford University, Stanford, CA; 5. Materials Science and Engineering, Stanford University, Stanford, CA; 6. Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA*

**3:54**

**DH-11**. **Dimension modulated magnetism in $SrRuO_3$/$SrTiO_3$ superlattices with controlling the $RuO_6$ octahedrons connections.** M. Gu[1], K. Wang[1], Y. Wang[1], Q. Xie[1], A. Zhang[2], G. Zhang[3] and *X. Wu*[1] *1. Nanjing University, Nanjing, China; 2. College of Science, Hohai University, Nanjing, China; 3. Physics, Indiana State University, Terre Haute, IN*

**4:06**

**DH-12**. **Multiferroic Properties and Strain Induced Spin Phonon Coupling in $BiFeO_3$/$CoFe_2O_4$ Thin Film Heterostructures.** *M.K. Singh*[1], G. Singh[1], A. Kumar[1], B. Khan[1] and R.S. Katiyar[2] *1. Centre of Material Sciences, University of Allahabad, Allahabad, India; 2. Department of Physics and Institute of Functional Nano Materials, University of Puerto Rico, San Juan, PR*

**4:18**

**DH-13**. **Magnetic coupling and enhancement of the switching field in $Fe_3O_4$/NM/Fe tri-layer system.** *T. Nagahama*[1], K. Oomori[2], T. Kawai[2], T. Yanase[1] and T. Shimada[1] *1. Graduate School of Engineering, Hokkaido University, Sapporo, Japan; 2. Graduate School of Chemical Sciences and Engineering, Hokkaido University, Sapporo, Japan*

WEDNESDAY AFTERNOON 1:30 — STUDIO 3-4

## Session DI
# MAGNETIC MICROSCOPY AND IMAGING

Stephen McVitie, Chair
University of Glasgow, Glasgow, United Kingdom

**1:30**

**DI-01**. **Selective sensitivity in Kerr microscopy.** I.V. Soldatov[1] and *R. Schaefer*[1,2] *1. Institute for Metallic Materials, Leibniz Institute for Solid State and Materials Research (IFW) Dresden, Dresden, Germany; 2. Institute for Materials Science, TU Dresden, Dresden, Germany*

1:42

**DI-02**. **Magneto-Optic Kerr Effect CCD Imaging with Polarization Modulation Technique.** *S. Nakayama*[1], M. Okano[1], Y. Nozaki[1] and S. Watanabe[1] *1. Department of Physics, Faculty of Science and Technology, Keio University, Yokohama, Japan*

1:54

**DI-03**. **Magneto-optical Color Imaging Of Magnetic Field Distribution.** *Y. Nagakubo*[1], Q. Liu[1], G. Lou[1] and T. Ishibashi[1] *1. Department of Materials Science & Technology, Nagaoka University of Technology, Niigata, Japan*

2:06

**DI-04**. **Spectromiicorscopic Proof Of Metal Penetration At Ferromagnet-Organics Heterojunctions.** K. Lu[1], T. Chuang[1], C. Lu[1], Y. Hsu[1] and *D. Wei*[1] *1. Nano Science, National Synchrotron Radiation Research Center, Hsinchu, Taiwan*

2:18

**DI-05**. **Imaging of Spin Hall Effect in Topological Insulators.** *Y. Liu*[1], J. Besbas[1], Y. Wang[1], Y. Wu[1], J. Moon[2], S. Oh[2], L. Wang[3] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. Department of Physics and Astronomy, The State University of New Jersey, Piscataway, NJ; 3. School of Applied Sciences, Department of Physics, RMIT University, Melbourne, VIC, Australia*

2:30

**DI-06**. **Investigation of dissipative magnetic solitons using x-ray holography with extended references.** *E.O. Burgos Parra*[1], N. Bukin[1], M. Dupraz[2], G. Beutier[2], S. Redjai Sani[3], S.A. Cavill[4], J. Åkerman[5], R.J. Hicken[1], G. van der Laan[6] and F.Y. Ogrin[1] *1. Physics and Astronomy, University of Exeter, Exeter, United Kingdom; 2. SIMaP, Grenoble-INP, CNRS, Grenoble, France; 3. Department of Material Science and Engineering, MIT - Massachusetts Institute of Technology, Cambridge, MA; 4. Physics, University of York, York, United Kingdom; 5. Univ. Gothenburg, Göteborg, Sweden; 6. Diamond Light Source, Didcot, United Kingdom*

2:42

**DI-07**. **Quantitative Magnetic Moment Mapping of Permanent Magnet Materials by X-Ray Magnetic Circular Dichroism Nano-Spectroscopy.** *T. Ueno*[1,2], A. Hashimoto[2], Y. Takeichi[2] and K. Ono[2] *1. National Institute for Materials Science, Tsukuba, Japan; 2. Institute of Materials Structure Science, High Energy Accelerator Research Organization, Tsukuba, Japan*

**2:54**

**DI-08**. **Simultaneous control of circularity and polarity in vortex arrays.** *M. Im*[1], K. Lee[2], P. Fischer[3], G. Meier[4], W. Chao[1] and J. Hong[5] *1. CXRO, Lawrence Berkeley National Laboratory, Berkeley, CA; 2. School of Mechanical & Advanced Material Engineering, Ulsan National Institute of Science Technology, Ulsan, The Republic of Korea; 3. LBNL, Berkeley, CA; 4. Hamburg Centre for Ultrafast Imaging, Hamburg, Germany; 5. Emerging Materials Science, Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea*

**3:06**

**DI-09**. **Magnetic scanning gate microscopy of CoFeB lateral spin valve.** *H. Corte-León*[1,4], P. Krzysteczko[2], J. Lee[3], A. Fernandez-Scarioni[2], D. Cox[1,5], R. Cowburn[3], H.W. Schumacher[2], V. Antonov[4] and O. Kazakova[1] *1. TQEM, National Physical Laboratory, Teddington, United Kingdom; 2. Nanomagnetism, PTB, Braunschweig, Germany; 3. Physics, University of Cambridge, Cambridge, United Kingdom; 4. Royal Holloway University of London, Egham, United Kingdom; 5. Applied Technology Institute, Surrey University, Guildford, United Kingdom*

**3:18**

**DI-10**. **Effect of Defects, Magnetocrystalline Anisotropy, and Shape Anisotropy on Magnetic Structure of Iron Thin Films by Magnetic Force Microscopy.** *K. Xu*[1], D. Schreiber[2], B. Johnson[2] and J. McCloy[1,3] *1. Material Science and Engineering Program, Washington State University, Pullman, WA; 2. Pacific Northwest National Laboratory, Richland, WA; 3. School of Mechanical and Materials Engineering, Washington State University, Pullman, WA*

**3:30**

**DI-11**. **Imaging Defects In Magnetic Multilayers Using Scanning Electron Microscopy.** E. Jackson[1], S. Duttagupta[2], S. Fukami[2], H. Ohno[2] and *A. Hirohata*[1] *1. Department of Electronics, University of York, York, United Kingdom; 2. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan*

**3:42**

**DI-12**. **High Resolution SEMPA Imaging of Domain Wall Spin Configurations in Mesoscopic Fe Rings.** *R.M. Reeve*[1], P. Krautscheid[1,2], M. Lauf[1], B. Krüger[1] and M. Kläui[1,2] *1. Institut für Physik, Johannes Gutenberg-Universität Mainz, 55099 Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz (MAINZ), 55128 Mainz, Germany*

**3:54**

**DI-13**. **Mapping Geometric Frustration in Quasicrystal Artificial Spin Ice Lattices.** *V. Brajuskovic*[1,2], F. Barrows[1,3], C. Phatak[1] and A. Petford-Long[1,2] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Materials Science and Engineering, Northwestern University, Evanston, IL; 3. Applied Physics Program, Northwestern University, Evanston, IL*

4:06

**DI-14**. **Determination of Domain Wall Chirality Using *in situ* Lorentz Transmission Electron Microscopy.** *J.J. Chess*[1], S.A. Montoya[2], E.E. Fullerton[2] and B.J. McMorran[1] *1. Department of Physics, University of Oregon, Eugene, OR; 2. Center for Recording Research, University of California San Diego, La Jolla, CA*

4:18

**DI-15**. **Electron Current Control of Biskyrmion Lattices.** *Y. Zhang*[1] and L. Peng[1] *1. Chinese Academy of Science, Institute of Physics, Beijing, China*

WEDNESDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session DP
# POWER AND CONTROL MAGNETICS I (Poster Session)

Takeshi Kato, Chair
Nagoya University, Nagoya, Japan

**DP-01**. **Magnetic Properties of Ni-Zn Ferrite / Metal Composite Core in MHz Range.** *S. Mori*[1,3], T. Mitsuoka[1], T. Sato[2] and N. Matsushita[3] *1. NGK Spark Plug Co., Ltd., Komaki, Japan; 2. Shinshu University, Nagano, Japan; 3. Tokyo Institute of Technology, Yokohama, Japan*

**DP-02**. **Multi-directional Electromagnetic Vibration Energy Harvester Using Circular Halbach Array.** *J. Qiu*[1], X. Liu[1], Z. Hu[1], Q. Chang[1], Y. Wen[1] and P. Li[1] *1. Research Center of Sensors and Instruments, College of Optoelectronic Engineering, Chongqing University, Chongqing, China*

**DP-03**. **Magnetic Characterization of Nanocrystalline Materials with Cut-Core Effect in Power Electronics Applications.** *M. Bahmani*[1] *1. Electric Power Engineering, Chalmers University of Technology, Gothenburg, Sweden*

**DP-04**. **New Design of PMSM using Hybrid Type Permanent Magnet for Replacing Rare Earth Materials.** *C. Jeong*[1] and J. Hur[1] *1. Incheon National University, Incheon, The Republic of Korea*

**DP-05**. **Rotational Speed Control of Vertical Axis Current Turbine Power System with Generator Magnetic Flux-Adjusting Strategies.** *S. Xu*[1], H. Wang[1] and H. Pan[2] *1. Institute of electrical engineering, Chinese Academy of Sciences, Beijing, China; 2. Zhejiang Ocean University, Zhoushan city, China*

**DP-06**. **Fuzzy-PI Combined Speed Control and Torque Ripple Minimization of Switched Reluctance Motors.** *H. Wei*[1] and J. Qi[2] *1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. Southeast University, NANJING, China*

**DP-07**. **Studies of High-Frequency Iron Core Loss for Synchronous Electric Machines Used in Electric Vehicles.** *R. Pei*[1] *1. Shanghai Innmag New Energy Co., Ltd., Shanghai, China*

**DP-08**. **A Low-velocity Water Generator Based On High-permeability Electromagnetic Transducer.** *Z. Lin*[1], J. Yang[1], J. Zhao[1], N. Zhao[1] and Q. Awais[1] *1. Department of Optoelectronic Engineering, Research Center of Sensors and Instruments, Chongqing University, Chongqing, China*

**DP-09**. **Modelling of an Electromagnetic Speed Reducer for Wind Energy Conversion Systems.** G.C. Maniçoba[1], *A.O. Salazar*[1], F.E. Carvalho Souza[2], P.V. Silva[2], R.F. Pinheiro[1] and R.S. de Medeiros[3] *1. Departamento de Engenharia de Computação e Automação, Universidade Federal do Rio Grande do Norte, Natal, Brazil; 2. Instituto Federal do Rio Grande do Norte, Natal, Brazil; 3. Departamento de Engenharia Mecânica, Universidade Federal do Rio Grande do Norte, Natal, Brazil*

**DP-10**. **A New Hybrid Excitation Flux Switching Motor with Ferrite Permanent Magnet.** *Y. Du*[1], Q. Wang[1], L. Quan[1] and X. Zhu[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**DP-11**. **Design of a New Four-Leg Three-Phase Voltage Source Inverter with Fewer Transistors.** Y. Luo[1], *C. Liu*[1], F. Yu[1] and C. Lee[2] *1. School of Energy and Environment, City University of Hong Kong, Hong Kong, China; 2. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, China*

**DP-12**. **A New Design of Wireless Charging for Micro Medical Robotics.** *C. Liu*[1], Y. Luo[1] and C. Lee[2] *1. School of Energy and Environment, City University of Hong Kong, Hong Kong, China; 2. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, China*

**DP-13**. **Power Distributions of A Co-Axial Dual-Mechanical-Port Flux-Switching Permanent Magnet Machine for Fuel-Based Extended Range Electric Vehicles.** *L. Zhou*[1], H. Wei[1] and G. Zhang[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**DP-14**. **Torque and Suspension Force Enhancement using Third-order Harmonic Injection of a Single Set Winding Multi-phase Bearingless Permanent Magnet Synchronous Motor.** *Y. Qin*[1] and H. Zhu[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**DP-15**. **Effect of Pole Number and Slot Number on Performance of Dual Rotor Permanent Magnet Wind Power Generator using Ferrite Magnets.** *P. Xu*[1], K. Shi[1], H. Zhu[1] and Y. Du[2] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; 2. Jiangsu University, Zhenjiang, China*

## Session DQ
# POWER AND CONTROL MAGNETICS II (Poster Session)
Igor Barsukov, Chair
University of California Riverside, Riverside, CA

**DQ-01**. **An Optimization Method of Back-EMF Waveforms for Outer-Rotor Permanent Magnet Brushless Machines with Different Magnet Configurations.** *H. Zhang*[1] and H. Wei[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**DQ-02**. **A Model Predictive Current Control of Flux-Switching Permanent Magnet Machines for Torque Ripple Minimization.** *W. Huang*[1], H. Wei[1] and F. Yu[2] *1. School of Electrical Engineering, Southeast University, Nanjing, China; 2. School of Electrical Engineering, Nantong University, Nantong, China*

**DQ-03**. **Parametric Analysis and Optimized Torque Characteristic of Coaxial Magnetic Gear Based on Subdomain Analytical Model.** *K. Shin*[1], H. Cho[1] and J. Choi[1] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

**DQ-04**. **Design and Analysis of Tubular Permanent Magnet Linear Generator for Small-Scale Wave Energy Converter.** *J. Kim*[1], J. Choi[1], M. Koo[1], J. Jeong[1] and K. Hong[3] *1. Chungnam National University, Dae-jeon, The Republic of Korea; 3. Offshore Plant Research Division, Korea Research Institute of Ships & Ocean Engineering, Daejeon, The Republic of Korea*

**DQ-05**. **Design and Analysis of Linear Oscillatory Single-Phase Permanent Magnet Generator for Free-Piston Stirling Engine Systems.** *J. Kim*[1], J. Choi[1], K. Lee[2] and S. Lee[2] *1. Chungnam National University, Dae-jeon, The Republic of Korea; 2. Automotive Components & Materials Group, Korea Institute of Industrial Technology, Gwangju, The Republic of Korea*

**DQ-06**. **An Inductance Fourier Decomposition-based Current-Hysteresis Control Strategy of Switched Reluctance Motors for Torque Ripple Minimization.** *H. Wei*[1] and J. Qi[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**DQ-07**. **Optimum Design characteristics for 210KW Traction Interior Permanent Magnet Synchronous Motor considering Torque Ripple Improvement.** *Y. Kim*[1], S. Lee[1] and J. Lee[1] *1. Department of Electrical Engineering, Hanbat National University, Dongseo-daero, The Republic of Korea*

**DQ-08**. **Withdrawn**

**DQ-09**. **Evaluation of Parameter Sensitivities for Flux-Switching Permanent Magnet Machines Based on Simplified Equivalent Magnetic Circuits.** *G. Zhang*[1], H. Wei[1] and M. Cheng[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**DQ-10**. **Decoupling Analysis of A Novel Bearingless Flux-Switching Permanent Magnet Motor.** *C. Zhao*[1] and H. Zhu[1] *1. Jiangsu University, Zhenjiang, China*

**DQ-11**. **Comparative Study and Experiment of a Double-Sided Permanent Magnet Linear Synchronous Generator According to Magnetization Pattern.** *S. Seo*[1], M. Koo[1], G. Jang[1] and J. Choi[1] *1. Electrical Engineering, Chung Nam National University, Daejoen, The Republic of Korea*

**DQ-12**. **Characteristic Analysis for the Influence of Auxiliary Teeth and Notching on the Reduction of the Detent Force of a Permanent Magnet Linear Synchronous Machine.** *S. Seo*[1], M. Koo[1] and J. Choi[1] *1. Electrical Engineering, Chung Nam National University, Daejeon, Korea, The Republic of Korea*

**DQ-13**. **Analysis and Experimental Verification for Unbalanced Magnetic Force of Permanent Magnet Machine according to Rotor Eccentricity.** *Y. Jeong Jin*[1] *1. Chungnam National University, Daejeon, The Republic of Korea*

**DQ-14**. **A Study of Performance Degradation caused by Axial Leakage Magnetic Flux in Spoke-type BLDC.** *S. Lee*[1] *1. Busan University of Foreign Studies, Busan, The Republic of Korea*

**DQ-15**. **Design and Implementation Analysis of a Double-layer Transverse Flux Induction Heating System with Distributed Spiral Coils.** *J. Wang*[1], J. Li[2], M. Yao[2], K. Liu[1], M. Long[1] and Z. Fang[1] *1. School of Electrical Engineering, Wuhan University, Wuhan, China; 2. Wuhan University of Technology, Wuhan, China*

WEDNESDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session DR
# SOFT MAGNETIC MATERIALS I (Poster Session)
Albrecht Jander, Chair
Oregon State University, Corvallis, OR

**DR-01**. **Thermal stability and magnetic properties of $MgFe_2O_4$@ZnO nanoparticles.** *M. Shanigaram*[1], D. Prabhu[2] and V. Srinivas[3] *1. Indian Institute of Technology, Chennai, India; 2. Centre for Automotive Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials, Chennai 600113, India, Chennai, India; 3. Department of Physics, Indian Institute of Technology Madras, Chennai, India*

**DR-02**. **Microstructural, Phase Stability and Mössbauer Studies of $Mn_{1-x}Ni_xFe_2O_4$ ($x$ = 0.3, 0.7) Ferrites Synthesized by Glycol-thermal Method.** *I.P. Ezekiel*[1] and T. Moyo[1] *1. Physics, University of KwaZulu-Natal, Durban, South Africa*

**DR-03**. **Time evolution of magnetic properties of $MgFe_2O_4$ nano particles: Role of cation distribution.** S. Raghuvanshi[1], F. Mazaleyrat[2] and *S. Kane*[1] *1. School of Physics, Devi Ahilya University, Indore, India; 2. SATIE-CNRS, ENS Cachan, Cachan, France*

**DR-04**. **Effects of Zn-doping on magnetic and dielectric properties of magnetoelectric $GaFeO_3$ nanocrystals.** *T. Han*[1], C. Yen[1] and Y. Chung[1] *1. Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan*

**DR-05**. **High-Temperature Structural Changes and Thermal Hysteresis and in Mixed Ferrite Core-Shell Nanoparticles.** *G.S. Gomide*[1], V. Pilati[1], P. Coppola[3], F. Gomes da Silva[1], F. Luis de Oliveira Paula[1,4], R. Perzynski[4], R. Aquino[2,1] and J. Depeyrot[1] *1. Institute of Physics, Universidade de Brasília, Brasília, Brazil; 2. Material Science Program, Universidade de Brasília, Brasília, Brazil; 3. Institute of Chemistry, Universidade de Brasília, Brasilia, Brazil; 4. Laboratoire PHENIX, Université Pierre et Marie Curie, Paris, France*

**DR-06**. **Synthesis, chemical composition, Mossbauer and magnetic characterizations of iron oxide nanoparticles.** *S.K. Sharma*[1], Sarveena[2], J. Vargas[3], D. Shukla[4], P. Zélis[5], C. Meneses[6] and M. Singh[2] *1. Physics, Universidade Federal do Maranhão, Sao Luis, Brazil; 2. Physics, H P University, Shimla, India; 3. Centro Atomico Bariloche (CNEA), Instituto Balseiro (U. N. Cuyo) and Conicet, 8400 San Carlos de Bariloche, Rio Negro, Argentina; 4. UGC DAE Consortium for Scientific Research, Indore, India; 5. Instituto de Física de La Plata (IFLP-CONICET), Universidade Nacional de La Plata (UNLP), La Plata, Argentina; 6. Núcleo de Pós-Graduação em Física, SE, Brazil*

**DR-07**. **Investigation on the magnetic and structural properties of $CoAl_{2-x}Fe_xO_4$.** *I. Ferraz*[1], S. da Silva[1], T.D. Castro[1,2], A. Franco Jr[3], J. Silva[3] and P. Morais[1,4] *1. Instituto de Física, Universidade de Brasília, Brasília, Brazil; 2. Instituto Federal de Educação, Ciência e Tecnologia de Brasília, Brasília, Brazil; 3. Instituto de Física, Universidade Federal do Goiás, Brasília, Brazil; 4. College of Chemistry and Chemical Engineering, Hefei, China*

**DR-08**. **Variations in the Ferromagnetic Resonance (FMR) Properties of Epitaxial Magnetite Thin Films across the Verwey Transition.** *A.V. Singh*[1], J. Beik Mohammadi[2], T. Mewes[2,1] and A. Gupta[1] *1. MINT, The University of Alabama, Tuscaloosa, AL; 2. Physics, MINT, University of Alabama, Tuscaloosa, AL*

**DR-09**. **Effects of Carbon Contents on Magnetic and Microwave Properties of FeGaC Thin Films.** *X. Liang*[1], C. Dong[1], X. Wang[1] and Y. Gao[1] *1. ECE, Northeastern University, Boston, MA*

**DR-10**. **High-Temperature First-Order-Reversal-Curve (FORC) Applied to Soft Magnetic Nanocomposite Materials.** *P. Ohodnicki*[1,2], A. Leary[2], M.E. McHenry[2], B. Dodrill[3] and J. Lindemuth[3] *1. National Energy Technology Laboratory, Pittsburgh, PA; 2. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA; 3. Lakeshore Cryotronics, Columbus, OH*

**DR-11**. **Improved structural, magnetic and spectroscopic properties of M-type strontium hexaferrite synthesised by citrate precursor method.** *K. Rana*[1], P. Thakur[1] and A. Thakur[1] *1. School of Physics & material Science, Shoolini University, Solan, Solan, India*

**DR-12**. **Effect of heat treatment on magnetic and electrical characteristics in FeSi@$CrPO_4$ core/shell composites.** *S. Tong*[1], M.J. Tung[1], W.S. Ko[1], C.P. Wu[1], Y.P. Wang[1] and L.C. Wang[1] *1. Electromagnetic Material and Device Lab., Industrial Technology Research Laboratories, Hsinchu, Taiwan*

**DR-13**. **New Metal Bonding for the Motor Core using Ceramic Precursor and Nano Ceramic Powder.** *K. Yun*[1], M. Hirano[1], S. Yanase[1] and Y. Ohya[1] *1. Engineering, Gifu University, Gifu, Japan*

**DR-14**. **First-principles calculations of the magnetic properties of $Fe_2P$-based alloys.** *I. Zhuravlev*[1], V. Antropov[2] and K. Belashchenko[1] *1. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE; 2. Ames Laboratory, Ames, IA*

**DR-15**. **Flaky FeSiAl particles: prepared by ball milling and their orientation in a magnetic field.** *X. Peng*[1], J. Li[1], Y. Yang[2], B. Hong[2], X. Wang[2] and H. Ge[2] *1. China Jiliang University, Hangzhou, China; 2. College of Materials Science and Engineering, China Jiliang University, HangZhou, China*

WEDNESDAY AFTERNOON 2:30 — GRAND BALLROOM

### Session DS

## SOFT MAGNETIC MATERIALS II (Poster Session)

Junjia Ding, Co-Chair
Argonne National Laboratory, Argonne, IL
Valentyn Novosad, Co-Chair
Argonne National Laboratory, Argonne, IL

**DS-01**. **Effect Of Sintering Temperature On High Frequency Core Loss Of NiZn Ferrite.** *G. Frajer*[1,2], G. Delette[1,2], O. Isnard[1,3], H. Chazal[1,4], P. Perichon[1,5] and F. Servant[1,2] *1. Université Grenoble Alpes, Grenoble, France; 2. CEA, LITEN, LMA, Grenoble, France; 3. Institut Néel, CNRS, Grenoble, France; 4. Laboratoire du Génie Electrique de Grenoble G2Elab, Grenoble, France; 5. CEA, LITEN, L2EP, Grenoble, France*

**DS-02**. **Effect of Cr Substitution on Structural, and Magnetic Properties of Ni-Co Ferrite Composite.** *B. Nandan*[1] and M.C. Bhatnagar[1] *1. Physics, IIT Delhi, New Delhi, India*

**DS-03**. **Tuning Magnetic Properties in Nickel Ferrite through Patterning and pH.** *A. Cruz*[1] and J. Schwartz[1] *1. Material Science, North Carolina State University, Raleigh, NC*

**DS-04**. **Curie temperature and magnetic properties of low temperature sintered CoTi-dope barium ferrite thick films for microwave devices.** *D. Chen*[1,2], G. Wang[1], Y. Li[3] and H. Zhang[4] *1. College of Materials and Chemical Engineering, Hainan University, Haikou, China; 2. School of Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, China; 3. State Key Lab of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; 4. University of Electronic Science and Technology of China, Chengdu, China*

**DS-05**. **Substitution effects on magnetic properties of $Mg_{1.3-x}Mn_xAl_yFe_{1.8-y}O_4$ ferrite.** *M. Kuo*[1] *1. China Steel Corporation, Kaohsiung, Taiwan*

**DS-06**. **Structure and magnetic properties of $Mg_{0.35}Cu_{0.2}Zn_{0.45}Fe_2O_4$ ferrite synthesized by co-precipitation method.** B. Yang[1] and *Z. Wang*[1] *1. Department of Applied Physics, Tianjin University, Tianjin, China*

**DS-07**. **Untangling the contributions of cerium and iron ions to the magnetism of Ce-doped yttrium iron garnet.** *B. Casals*[1], R. Cichelero[1], H. Babu Vasili[2], J. Geshev[3], M. Espínola[1], S. Geprägs[4], M. Opel[4], R. Gross[4,5], J. Fontcuberta[1] and G. Herranz[1] *1. Institut de Ciència de Materials de Barcelona ICMAB-CSIC, Bellaterra, Spain; 2. ALBA Synchrotron Light Source, Cerdanyola del Vallès, Spain; 3. Instituto de Física, UFRGS, Porto Alegre, Brazil; 4. Walther-Meißner-Institut, Bayerische Akademie der Wissenschaften, Garching, Germany; 5. Physik-Department, Technische Universität München, Garching, Germany*

**DS-08**. **Synthesis and characterization of co-doped $SrFe_{12-X}(DyAl)_XO_{19}$ Hexaferrite.** *H. Adhikari*[1], M. Ghimire[1], D. Neupane[1] and S.R. Mishra[1] *1. Physics and Materials Science, The University of Memphis, Memphis, TN*

**DS-09**. **Observation of high negative uniaxial anisotropy in pulsed laser deposited Yttrium iron garnet thin films.** *B. Bhoi*[1], N. Venkataramani[2], S. Prasad[3], R. Aiyar[1], G. Kumar[2], I. Samajdar[1,2] and M. Kostylev[4] *1. Center for Research in Nanotechnology and Science, Indian Institute of Technology Bombay, Mumbai, India; 2. Department of Metallurgical and Material Science, Indian Institute of Technology Bombay, Mumbai, India; 3. Physics, Indian Institute of Technology Bombay, Mumbai, India; 4. School of Physics, The University of Western Australia, Crawley, WA, Australia*

**DS-10**. **Investigation of magnetic and thermal properties of the Bio-plasma treated $Ni_{1-x}Zn_xFe_2O_4$ based on Mössbauer spectroscopy.** *H. Choi*[1], S. Kim[1], S. Yoon[2] and C. Kim[1] *1. Department of Physics, Kookmin University, Seoul, The Republic of Korea; 2. Department of Physics, Gunsan National University, Gunsan, The Republic of Korea*

**DS-11**. **The crystalline, magnetic and dielectric properties of Zn doped strontium Z-type hexaferrite synthesized by polymerizable complex method.** *J. Lim*[1], E. Hahn[2], I. Shim[1] and C. Kim[1] *1. Kookmin University, Seoul, The Republic of Korea; 2. Suwon University, Hwaseong, The Republic of Korea*

**DS-12**. **The ferromagnetic resonance linewidth of thin La:YIG films prepared by liquid phase epitaxy method.** *Q. Yang*[1] *1. University of Electronic Science and Technology of China, Chengdu, China*

**DS-13**. **Effect of Thickness on Magnetic and Microwave Properties of RF-Sputtered Zn-Ferrite Thin Films.** *B. Sahu*[1], N. Venkataramani[2], S. Prasad[1] and R. Krishnan[3] *1. Physics, Indian Institute of Technology Bombay, Mumbai, India; 2. Department of Metallurgical and Material Science, IIT Bombay, Mumbai, India; 3. Retired scientists, CNRS/Universite de Versailles-St-Quentin, Versailles Cedex, France*

**DS-14**. **Monodomain MgCuZn Ferrite With Equivalent Permeability And Permittivity In The Broad Frequency Range.** *H. Jia*[1], W. Liu[1], Z. Zhang[1], F. Chen[1], Y. Li[1], J. Liu[1] and Y. Nie[1] *1. Huazhong University of Science and Technology, Wuhan, China*

**DS-15**. **Spin Seebeck Effect of $Y_3Fe_5O_{12}$ (YIG) prepared by Sol-Gel Synthesis.** *M. Jang*[1], K. Lee[1] and S. Baek[2] *1. School of Mechanical & Advanced Material Engineering, Ulsan National Institute of Science Technology, Ulsan, The Republic of Korea; 2. Electronic Materials Research Center, Korea Institute of Science and Technology (KIST), Seoul, The Republic of Korea*

WEDNESDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session DT
# SOFT MAGNETIC MATERIALS III
# (Poster Session)
Michael McHenry, Chair
Carnegie Mellon University, Pittsburgh, PA

**DT-01**. **Magnetic Losses in Si-Fe Alloys for Avionic Applications.** *A. Faba*[1], E. Cardelli[2], S. Quondam Antonio[1] and M. Pompei[1] *1. Department of Engineering, University of Perugia, Perugia, Italy; 2. Ingegneria, Universita di Perugia, Perugia, Italy*

**DT-02**. **Effect of Aluminum on the magnetic domain walls of non-oriented electrical steels.** *H. Choi*[1], Y. Koo[1] and S. Lee[2] *1. POSTECH, Pohang, The Republic of Korea; 2. POSCO, Pohang, The Republic of Korea*

**DT-03**. **Effect of cobalt doping on martensitic transformations and magnetic properties of $Ni_{50-X}Co_xMn_{37}Sn_{13}$(x=1, 2, 3) Heusler ribbons.** *S. Louidi*[1] and J. Sunol[2] *1. Physics Departement, University of 20 August-1955 Skikda, Skikda, Algeria; 2. Physics, University of Girona, Dep. De Fisica, Universitat de Girona, Campus de Montitlivi, Girona 17071, Spain., Spain*

**DT-04**. **Effect of amidosulfate in a DES-based bath on structural and magnetic properties of electroplated Fe-Ni films.** *T. Akiyoshi*[1], K. Azuma[1], T. Yanai[1], M. Nakano[1] and H. Fukunaga[1] *1. Nagasaki University, Nagasaki, Japan*

**DT-05**. **FeSiAl soft magnetic composites with NiZn ferrite coating produced via solvothermal method.** *J. Li*[1], X. Peng[1], H. Ge[1] and X. Wang[1] *1. China Jiliang University, Hangzhou, China*

**DT-06**. **Fe-rich Fe-Mo-Si-B-P amorphous alloy ribbons with stable good soft magnetic properties and corrosion resistance.** Y. Han[1], J. Ding[1], F. Kong[2], A. Inoue[1,2], S. Zhu[1] and *Z. Wang*[3] *1. School of Materials Science and Engineering, Tianjin University, Tianjin, China; 2. Josai International University, Togane, Japan; 3. Department of Applied Physics, Tianjin University, Tianjin, China*

**DT-07**. **Structure and magnetic properties of FeCoAlSiBNbCu alloys.** Z. Xie[1], *Z. Wang*[1] and Y. Xu[1] *1. Department of Applied Physics, Tianjin University, Tianjin, China*

**DT-08**. **Upper limit for obtaining high $B_s$ and low $H_c$ in nanocrystalline FeCoSiBPCu alloys.** *Y. Zhang*[1], P. Sharma[1] and A. Makino[1] *1. Institute for Materials Research, Tohoku University, Sendai, Japan*

**DT-09**. **The Deformation Behavior of $Fe_{83}Si_2B_{11}P_3C_1$ Amorphous Strips at Cryogenic Temperature.** W. Wei[1], C. Chang[2], Y. Wang[1], Y. Liu[1], Y. Long[1], *S. Zong*[1] and H. Kuang[3] *1. School of Material Science and Engineering, University of Science and Technology Beijing, Beijing, China, Beijing, China; 2. Key Laboratory of Magnetic Materials and Devices, Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, China; 3. Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**DT-10**. **Fe-Si-B-P-C-Cu Nanocrystalline Soft Magnetic Powders With High *Bs* And Low Coreloss.** *T. Takahashi*[1], K. Yoshida[1], Y. Shimizu[1], A.D. Setyawan[2], M. Bito[1], M. Abe[1] and A. Makino[2] *1. Tohoku Magnet Institute Co., LTD, Sendai, Japan; 2. Research and Development Center for Ultra High Efficiency Nano-crystalline Soft Magnetic Materials, Institute for Materials Reserch, Tohoku University, Sendai, Japan*

**DT-11**. **Fabrication and Characterisation of Novel Amorphous/ SMA CoFeSiB/NiTi Multilayer Microwires Obtained by Functionally Graded Deposition of NiTi Thin Films.** *F. Borza*[1], S. Corodeanu[1], T.A. Ovari[1], M. Grigoras[1] and H. Chiriac[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

**DT-12**. **Zero-field NMR Studies of Mechanically Alloyed CoNi and FeCo.** *M. Fujioka*[1], H. Jinushi[2], K. Matsumoto[1] and K. Hiraoka[1] *1. Graduate School of Science and Engineering, Ehime University, Matsuyama, Japan; 2. University Education Center, Fukuyama University, Fukuyama, Japan*

**DT-13**. **Corrleation between pre-annealing temperature and {110}<001> annealing texture in C- and Al-free Fe-3%Si-0.1%Mn-0.002%S electrical steel.** *E. Oh*[1], N. Heo[1] and Y. Koo[1] *1. POSTECH, Pohang. Gyeongbuk, The Republic of Korea*

WEDNESDAY AFTERNOON 2:30 | GRAND BALLROOM

## Session DU
# MAGNETIC SENSORS II (Poster Session)

Joseph Davies, Chair
NVE Corporation, Eden Prairie, MN

**DU-01**. **Magnetic Sensors for Motion Measurement of Avionic Ballscrews.** *A. Faba*[1], E. Cardelli[1], M. Cibeca[1], R. Marsili[1], M. Pompei[1] and G. Rossi[1] *1. Department of Engineering, University of Perugia, Perugia, Italy*

**DU-02**. **Correlation of Surface Magnetic Domain Structures by Magnetic Force Microscopy with Giant Magneto-impedance of Amorphous Microwires.** T.M. Eggers[1], S. Jiang[2], O. Thiabhog[1], H.X. Shen[1,2], J. Liu[3], J. Sun[2], H. Srikanth[1] and *M. Phan*[1] *1. Department of Physics, University of South Florida, Tampa, FL; 2. School of Materials Science and Engineering, Harbin Institute of Technology, Harbin, China; 3. School of Materials Science and Engineering, Inner Mongolia University of Technology, Hohhot, China*

**DU-03**. **Analysis of thin-film magnetoimpedance behavior at low MHz region based on domain wall equation and bias susceptibility theory.** *C. Sumida*[1], H. Kikuchi[1], H. Uetake[4], S. Yabukami[4], S. Hashi[3] and K. Ishiyama[2] *1. Iwate University, Morioka, Japan; 2. RIEC, Tohoku University, Sendai, Japan; 3. Research Institute of Electrical Communication, Tohoku University, Sendai, Japan; 4. Tohoku-Gakuin University, Tagajo, Japan*

**DU-04**. **Behavior of sensitivity at edge of thin-film magnetoimpedance element.** *S. Oe*[1], H. Kikuchi[1], S. Yabukami[2] and H. Uetake[2] *1. Iwate University, Morioka, Japan; 2. Tohoku-Gakuin University, Tagajo, Japan*

**DU-05**. **Long GMI sensors for the detection of repetitive deformation of a surface.** *S. Corodeanu*[1], H. Chiriac[1], T.A. Ovari[1] and N. Lupu[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

**DU-06**. **Real-time brain activity measurement and signal processing system using highly sensitive MI sensor.** *K. Wang*[1] and T. Uchiyama[2] *1. Nagoya University, Nagoya, Japan; 2. Electrical Engineering, Nagoya University, Nagoya, Japan*

**DU-07**. **MI-based vibration sensor for non-invasive flow rate measurements.** S. Corodeanu[1], C. Hlenschi[1], F. Borza[1], H. Chiriac[1], N. Lupu[1] and *T.A. Ovari*[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania*

**DU-08**. **Sub-nano Tesla Magnetic Imaging Based On Room-temperature Magnetic Flux Sensors With Vibrating Sample Magnetometry.** *Y. Adachi*[1] and D. Oyama[1] *1. Applied Electronics Laboratory, Kanazawa Institute of Technology, Shibuya-ku, Japan*

**DU-09**. **Magneto-optical Micromechanical Systems for Magnetic Field Mapping.** *A. Truong*[1] *1. CEA, Grenoble, France*

**DU-10**. **Evaluation of Superficial Crack Depth Using Eddy Current Method with Magnetic Tunnel Junction.** *Z. Jin*[1], M. Abe[1], K. Fujiwara[1], M. Oogane[1] and Y. Ando[1] *1. Applied Physics, Tohoku university, Sendai, Japan*

**DU-11**. **Thin resolver using the easy magnetization axis of the grain-oriented silicon steel as an angle indicator.** *J. Oshino*[1] and I. Sasada[1] *1. Applied Science for Electronics and Materials, Kyushu University, Kasuga, Japan*

**DU-12**. **Tunneling magnetoresistance biosensor for the detection of E. coli O157:H7 bacteria.** *Y. Wu*[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, NingBo, China*

**DU-13**. **Magnetic Particles Detection By Using Spin-Valve Sensors And Magnetic Traps.** A. Jitariu[1,2], C. Ghemes[1], N. Lupu[1] and *H. Chiriac*[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Alexandru Ioan Cuza University, Iasi, Romania*

**DU-14**. **Giant Magnetostrictive Thin Film Pressure Sensor Based on Villari Effect.** *S. Yu*[1,2] and B. Wang[1] *1. Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. Information Engineering, Renai College of Tianjin University, Tianjin, China*

**DU-15**. **Feasibility of Helmholtz Coils for Induced Voltage Measurements in a Magnetostrictive Position Sensor.** E. Yoo[1], *Y. Park*[1], M.D. Noh[2] and M. Kim[1] *1. Mechatronics Engineering, Chungnam Natational University, Daejeon, The Republic of Korea; 2. Mechatronics Engineering, Chungnam National University, Daejeon, The Republic of Korea*

**DU-16**. **Phase–sensitive dc magnetometer based on piezoelectric–magnetostrictive heterostructure.** *M. Zhang*[1] and S. Or[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong*

## Session DV

# MAGNETIC INSTRUMENTATION AND CHARACTERIZATION II (Poster Session)

Yaohua Liu, Co-Chair
Oak Ridge National Laboratory, Oak Ridge, TN
Claudia Stahl, Co-Chair
Max Planck Institute for Intelligent Systems, Stuttgart, Germany

**DV-01**. **Magneto-electroluminescence in OLED Devices with Ferromagnetic Electrodes.** *N. Lee*[1], Y. Bae[1], H. Jung[2], C. Lee[2] and T. Kim[1] *1. Department of Physics, Ewha Womans University, Seoul, The Republic of Korea; 2. School of Electrical Engineering and Computer Science, Seoul National University, Seoul, The Republic of Korea*

**DV-02**. **Direct Imaging and Detection of Fast Magnetic Domain Behavior in Nanowires by Magnetic Domain Scope Method using Contact-scanning of Magnetic Recording Head with AC preamplifier.** *Y. Miyamoto*[1], M. Okuda[1] and M. Kawana[1] *1. Science & Technology Research Labs., NHK (Japan Broadcasting Corporation), Tokyo, Japan*

**DV-03**. **Torque Magnetometry And Susceptometry Using Split-Beam Optomechanical Nanocavities.** *T. Firdous*[1,2], M. Wu[3,4], N. Wu[3,4], F. Fani Sani[1,2], J. Losby[1,2], P. Barclay[3,4] and M. Freeman[1,2] *1. Department of Physics, University of Alberta, Edmonton, AB, Canada; 2. National Institute for Nanotechnology, Edmonton, AB, Canada; 3. Department of Physics and Astronomy, University of Calgary, Calgary, AB, Canada; 4. Institute for Quantum Science and Technology, University of Calgary, Calgary, AB, Canada*

**DV-04**. **Advances in Magnetic Imaging using Scanning X-ray Microscopy.** *M. Weigand*[1], I. Bykova[1], C. Stahl[1], S. Ruoss[2], H. Stoll[1], E.J. Goering[3], B. Van Waeyenberge[4] and G.A. Schuetz[2] *1. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Modern Magnetic Systems, Max-Planck-Institut for Intelligent Systems, Stuttgart, Germany; 3. Schuetz, Max-Planck-Institute for Intelligent Systems, Stuttgart, Germany; 4. Subatomic and Radiation Physics, Vrije Universiteit Brussels, Gent, Belgium*

**DV-05**. **Optical technique for spin-orbit torque measurement based on linear and circular polarizations.** *J. Kim*[1], S.C. Baek[2,3], B. Park[2] and S. Choe[1] *1. Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea; 2. Material Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea; 3. School of Electrical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, The Republic of Korea*

**DV-06**. **Asymmetric Merons Studied by Magnetic Transmission X-ray Microscopy.** A. Hierro-Rodriguez[1], L. Alvarez-Prado[2,3], C. Blanco-Roldán[2,3], C. Quirós[2,3], A. Sorrentino[4], *J. Martin*[2,3], J. Alameda[2,3], E. Pereiro[4], M. Velez Fraga[2,3] and S. Ferrer[4] *1. Depto. Física e Astronomia, INESC-TEC, Faculdade de Ciencias, Universidade do Porto, Porto, Portugal; 2. Depto. Fisica, Universidad de Oviedo, Oviedo, Spain; 3. CINN (CSIC-Universidad de Oviedo), El Entrego, Spain; 4. ALBA Synchrotron, Cerdanyola del Valles, Spain*

**DV-07**. **Characterization of Magnetostriction and Delta-E Effect of FeGaB Thin Films Using Optical Technique.** *C. Dong*[1], H. Zhou[1], M. Li[1], Z. Wang[1], X. Wang[1], Y. Gao[2] and N.X. Sun[3] *1. ECE, Northeastern University, Boston, MA; 2. Winchester Technologies, LLC., Burlington, MA; 3. Northeastern University, Boston, MA*

**DV-08**. **The Output Characteristic Of Cantilever-like Tactile Sensor Based On The Inverse-magnetostrictive Effect.** *L. Wan*[1] and B. Wang[2] *1. Hebei University of Technology, Tianjin, China; 2. Electrical Engineering, Hebei University of Technology, Tianjin, China*

**DV-09**. **Mechanical-magnetic-electric coupled behaviors for stress-driven Terfenol-D energy harvester.** S. Cao[1], J. Zheng[1], *B. Wang*[1], R. Pan[1] and R. Zhao[1] *1. Hebei University of Technology, Tianjin, China*

**DV-10**. **Novel Mechanical Magnetometry of a Micron-sized Superconducting Ring.** *H. Choi*[1,2], Y. Kim[1] and J. Choi[1,2] *1. Division of Physical Metrology, Korea Reserach Institute of Standards and Science, Daejeon, The Republic of Korea; 2. Nano science, University of Science and Technology, Deajeon, The Republic of Korea*

**DV-11**. **Thermoelectric Detection of Inclusions in Metallic Biomaterials by Magnetic Sensing.** *H. Carreon*[1] *1. Universidad Michoacana, Morelia, Mexico*

**DV-12**. **Beamline I21 – Resonant Inelastic X-ray Scattering (RIXS) at Diamond Light Source.** K. Zhou[1], A. Walters[1] and *M. Garcia-Fernandez*[1] *1. Physical Science, Diamond Light Source Ltd, Didcot, United Kingdom*

**DV-13**. **Control of relaxation time by self-synchronization on a spin torque oscillator.** *S. Tsunegi*[1,2], E. Grimaldi[2], R. Lebrun[2], H. Kubota[1], K. Yakushiji[1], J. Grollier[2], A. Fukushima[1], S. Yuasa[1] and V. Cros[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Palaiseau, France; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France*

**DV-14**. **Tilt Angle Dependence of the Modulated Interference Effects in Photo-Elastic Modulators.** *M. Talukder*[1] and W.J. Geerts[2] *1. Physics, Texas State University, Austin, TX; 2. Physics, Texas State University, San Marcos, TX*

**DV-15**. **Magnetoelectric intrinsic gradiometer with high sensitivity and high ambient noise rejection.** *M. Zhang*[1] and S. Or[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong*

## Session DW
# HYPERTHERMIA, MRI, AND OTHER BIO-ASSAYS II (Poster Session)

Cindi Dennis, Chair
NIST, Gaithersburg, MD

**DW-02**. **Mesoporous Nanoparticle Supported Liposomes For Magnetic Hyperthermia Triggered Drug Delivery.** M. Eizadi Sharifabad[1], *T. Mercer*[2] and T. Sen[1] *1. Centre for Materials Science, University of Central Lancashire, Preston, United Kingdom; 2. Jeremiah Horrocks Institute for Mathematics, Physics & Astrophysics, University of Central Lancashire, Preston, United Kingdom*

**DW-03**. **Experimental Ex-Vivo Validation Of PMMA-Based Bone Cements Loaded With Magnetic Nanoparticles Enabling Hyperthermia Of Metastatic Bone Tumors.** *M. Harabech*[1], N.R. Kiselovs[2], W. Maenhoudt[2], G. Crevecoeur[1], D. Van Roost[2] and L. Dupré[1] *1. Ghent University, Zwijnaarde - Ghent, Belgium; 2. Ghent University Hospital, Ghent, Belgium*

**DW-04**. **Magnetic, Structural, And Magnetocaloric Properties Of Ni-Al And Ni-Si Binary Alloys For Self-Controlled Hyperthermia Applications.** *S. Pandey*[1], A. Quetz[1], A. Aryal[1], I. Dubenko[1], D. Mazumdar[1], S. Stadler[2] and N. Ali[1] *1. Physics, Southern Illinois University, Carbondale, IL; 2. Physics, Louisiana State University, Baton Rouge, LA*

**DW-05**. **Withdrawn**

**DW-06**. **Frequency Dependence of Initial Heat Generation in Magnetite Nanoparticles.** *S. Yoon*[1], C. Kim[2], H. Choi[2] and J. Choi[2] *1. Dept. of Physics, Gunsan National University, Gunsan, The Republic of Korea; 2. Department of Physics, Kookmin University, Seoul, The Republic of Korea*

**DW-07**. **Tissue temperature analysis in Magnetic Hyperthermia with Fe-Cr-Nb-B magnetic particles.** L. Astefanoaei[1], H. Chiriac[2] and *A. Stancu*[1] *1. Department of Physics, Alexandru Ioan Cuza University, Iasi, Romania; 2. National Institute of R&D for Technical Physics, Iasi, Romania*

**DW-08**. **Mossbauer study on silica magnetite composite microspheres with different annealing temperature.** Y. Zhu[1], W. Chao[1], Q. Chen[1], X. Zhou[1], J. Yue[1], H. Yuan[1], Y. Yin[1], *H. Huang*[1,2], Y. Zhai[1,3], B. You[3] and J. Du[3] *1. Department of Physics, Southeast University, Nanjing, China; 2. School of Material Science and Engineering, Southeast Univerity, Nanjing, China; 3. National Laboratory of Solid Microstructures, Nanjing University, Nanjing, China*

**DW-09**. **Relationship between Ion Concentration of Ferrofluid and Response Signals of Magnetic Nanoparticles against AC magnetic fields.** *S. Oda*[1] and Y. Kitamoto[1] *1. Innovative and Engineered Materials, Tokyo Institute of Technology, Yokohama, Japan*

**DW-10**. **Effects of Magnetic Stimulation on K-Ras-Driven Lung Cancer in Mice.** N. Zhang[1,2], *S. Wang*[1], C. Zhang[2] and S. Wang[1] *1. State Key Laboratory of Electrical Insulation and Power Equipment, Faculty of Electrical Engineering, Xi'an Jiaotong University, Xi'an, China; 2. Oncology, Johns Hopkins University School of Medicine, Baltimore, MD*

**DW-11**. **Instrumentation for the Development of Ultra-Low Field Magnetic Resonance Contrast Agents.** *X. Yin*[1,2], Y. Nakashima[1,3], M.A. Boss[1], J. Mates[1], C. Clickner[1], J. Brown[1], E. Elliott[1,4], S. Liou[2] and J. Moreland[1] *1. National Institute of Standards and Technology, Boulder, CO; 2. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE; 3. Kyushu University, Fukuoka, Japan; 4. William G. Lowrie Department of Chemical and Biomolecular Engineering, The Ohio State University, Columbus, OH*

**DW-12**. **Spatial resolution and maximum compensation factor of two-dimensional selective excitation pulses for MRI of objects containing conductive implants.** *T. Woo*[1], D. Kim[1], T. Someya[1] and M. Sekino[1] *1. The University of Tokyo, Tokyo, Japan*

**DW-13**. **Effect of Varying MRI Data on Volume Stimulated in Brain during Transcranial Magnetic Stimulation.** *F. Syeda*[1], E.G. Lee[2], D.C. Jiles[3] and R.L. Hadimani[1,3] *1. Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA; 2. Department of Psychiatry, Massachusetts General Hospital, Boston, MA; 3. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA*

**DW-14**. **Transcranial Magnetic Stimulation- Coil Design with Improved Focality.** P. Rastogi[1], E.G. Lee[3], *R. Hadimani*[2] and D.C. Jiles[1] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA; 2. Department of Mechanical and Nuclear Engineering, Virginia Commonwealth University, Richmond, VA; 3. Department of Psychiatry, Massachusetts General Hospital, Harvard Medical School, Boston, MA*

**DW-15**. **Superparamagnetic-particles Mediated Quantification Of Biomarkers.** *M. Rivas*[1], D. Lago-Cachón[1], A. Moyano[1,2], M. Salvador[1,2], J.C. Martínez-García[1], J.A. García[1], M. Oliveira-Rodríguez[2], M. Blanco-López[2] and J. Rivas[3] *1. Department of Physics, University of Oviedo, Gijón, Spain; 2. Department of Physical and Analytical Chemistry, University of Oviedo, Oviedo, Spain; 3. Applied Physics, Univ. Santiago de Compostela, Santiago de Compostela, Spain*

WEDNESDAY
EVENING
6:00

MARDI GRAS A-E

## Session ZA
# EVENING SESSION: NEUROMORPHIC COMPUTING

Peter Fischer, Chair
Lawrence Berkeley National Laboratory, Berkeley, CA

**6:00**

**Introductions and Best Student Presentation Award**

**6:10**

**ZA-01**. **Neuromorphic Computing.** ***(Invited)*** *I.K. Schuller*[1] *1. Physics and Center for Advanced Nanoscience, UCSD, La Jolla, CA*

**6:40**

**ZA-02**. **Nonvolatile Brain-Inspired VLSIs Based on CMOS/MTJ Hybrid Technology for Ultralow-Power Performance and Compact Chip.** ***(Invited)*** *T. Endoh*[1] and Y. Ma[1] *1. Tohoku University, Sendai, Japan*

**7:10**

**ZA-03**. **Spintronic nanodevices for bio-inspired computing.** ***(Invited)*** *J. Grollier*[1] *1. Unité Mixte CNRS/Thales, Palaiseau, France*

THURSDAY
MORNING
8:30

MARDI GRAS A-E

## Session EA
# SYMPOSIUM: TERAHERTZ SPINTRONICS

Markus Münzenberg, Chair
Ernst-Moritz-Arndt University, Greifswald, Germany

**8:30**

**EA-01**. **Ultrafast spintronics with terahertz radiation.** ***(Invited)*** *T. Kampfrath*[1] and T. Seifert[1] *1. Fritz Haber Institute, Max Planck Society, Berlin, Germany*

**9:06**

**EA-02**. **THz-driven Ultrafast Spin-Lattice Scattering In Metallic Thin Films.** ***(Invited)*** *S. Bonetti*[1], M. Hoffmann[2], M. Sher[2], Z. Chen[3], M. Hudl[1], S. Kovalev[4], N. Awari[4], B. Green[4], M. Gensch[4], S. Yang[5], M. Samant[5], S.S. Parkin[6] and H. Durr[2] *1. Department of Physics, Stockholm University, Stockholm, Sweden; 2. SLAC National Accelerator Laboratory, Menlo Park, CA; 3. Physics, Stanford University, Stanford, CA; 4. HZDR, Dresden, Germany; 5. IBM Almaden Research Center, San Jose, CA; 6. Max Planck Institute for Microstructure Physics, Halle (Saale), Germany*

**9:42**

**EA-03**. **THz Magnetization Dynamics and Transient Spin Currents.** ***(Invited)*** *L. Bocklage*[1,2] *1. Photon Science, Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany; 2. The Hamburg Centre for Ultrafast Imaging, Hamburg, Germany*

**10:18**

**EA-04**. **Theory of THz magnons in ferrimagnets and spin-pumping.** ***(Invited)*** *J. Barker*[1] and G.E. Bauer[2,3] *1. IMR, Tohoku University, Sendai, Japan; 2. IMR & WPI-AIMR, Tohoku University, Sendai, Japan; 3. Kavli Institute of NanoScience, Delft University of Technology, Delft, Netherlands*

**10:54**

**EA-05**. **Ultrafast magnetization dynamics in ferromagnetic thin films induced by a THz pulse – from the weak to the strong-field regime.** ***(Invited)*** *C. Hauri*[1] *1. SwissFEL, Paul Scherrer Institute, Hunzenschwil, Switzerland*

THURSDAY MORNING 8:30 — MARDI GRAS F-H

## Session EB
# MAGNONICS III
Haiming Yu, Chair
Beihang University, Beijing, China

**8:30**

**EB-01**. **Magnetization oscillation and waves excited by the nonlocal spin injection.** ***(Invited)*** *V.E. Demidov*[1], S. Urazhdin[2] and S. Demokritov[1] *1. University of Muenster, Muenster, Germany; 2. Emory University, Atlanta, GA*

**9:06**

**EB-02**. **Spin wave caustics driven by the Dzyaloshinskii-Moriya interaction and spin currents.** *J. Kim*[1], R. Stamps[2] and R.E. Camley[3] *1. Centre for Nanoscience and Nanotechnology (C2N), CNRS, Univ. Paris-Sud, Universite Paris-Saclay, Orsay, France; 2. SUPA School of Physics and Astronomy, University of Glasgow, Glasgow, United Kingdom; 3. Department of Physics and Energy Science, University of Colorado, Colorado Springs, CO*

**9:18**

**EB-03**. **Doppler Effect In A Solid Medium: Spin Wave Emission By A Precessing Domain Wall In Spin Current.** H. Xia[1], J. Chen[1], X. Zeng[2] and *M. Yan*[1] *1. Physics, Shanghai University, Shanghai, China; 2. Mathematics, Shanghai University, Shanghai, China*

**9:30**

**EB-04**. **Direct Microscopic Observation of Spin Wave Focussing in a Fresnel Lens.** *J. Gräfe*[1], M. Decker[4], K. Keskinbora[1], M. Noske[1], P. Gawronski[5], H. Stoll[1], C. Back[4], G.A. Schuetz[2] and E.J. Goering[3] *1. Max Planck Institute for Intelligent Systems, Stuttgart, Germany; 2. Modern Magnetic Systems, Max-Planck-Institut for Intelligent Systems, Stuttgart, Germany; 3. Schuetz, Max-Planck-Institute for Intelligent Systems, Stuttgart, Germany; 4. University of Regensburg, Regensburg, Germany; 5. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Krakow, Poland*

**9:42**

**EB-05**. **Scanning Microwave Microscopy for the Study of Spin Waves.** A. Lara[1], F. Aliev[1], J.L. Prieto[2], *J. Weber*[3], S. Berweger[3], S. Russek[3] and P. Kabos[3] *1. Universidad Autónoma de Madrid, Madrid, Spain; 2. Física Aplicada, Universidad Politécnica de Madrid, Madrid, Spain; 3. National Institute of Standards and Technology, Boulder, CO*

**9:54**

**EB-06**. **All-electrical broadband phase-resolved spectroscopy of propagating spin waves in micrometer sized thin magnetic films.** *F. Ciubotaru*[1,2], T. Devolder[3], M. Manfrini[1], C. Adelmann[1] and I.P. Radu[1] *1. imec, Leuven, Belgium; 2. KU Leuven, Leuven, Belgium; 3. University Paris-Sud, Orsay, France*

**10:06**

**EB-07**. **Withdrawn**

**10:18**

**EB-08**. **Voltage Induced Mechanical/Spin Wave Propagation Over Long Distances.** *C. Chen*[1], C. Liang[1], G. Carman[1] and A.E. Sepulveda[1] *1. Department of Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA*

**10:30**

**EB-09**. **The mechanical back-action of a spin-wave resonance in a magnetoelastic thin film on a surface acoustic wave.** *P. Gowtham*[1], D. Labanowski[2] and S. Salahuddin[1] *1. EECS, University of California, Berkeley, CA; 2. University of California, Berkeley, CA*

**10:42**

**EB-10**. **Spin wave propagation in a non-uniform temperature profile in a yttrium iron garnet (YIG) thin film.** *G.A. Riley*[1], C.L. Ordóñez-Romero[2] and K. Buchanan[1] *1. Department of Physics, Colorado State University, Fort Collins, CO; 2. Solid State, Physics Institute, UNAM., Mexico City, Mexico*

**10:54**

**EB-11**. **Temperature-Dependent Spin Wave Stiffness, Damping, and Magnetization of Heavy-Metal-Doped Permalloy Films.** *Y. Yin*[1,2], M. Ahlberg[2], P. Dürrenfeld[3,2], R.K. Dumas[2], Y. Zhai[1] and J. Åkerman[2,4] *1. Physics, Southeast University, Nanjing, China; 2. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 3. School of Electronic Science and Engineering, Nanjing University, Nanjing, China; 4. Department of Material and Nano Physics, School of ICT, KTH Royal Institute of Technology, Kista, Sweden*

**11:06**

**EB-12**. **Magnon-polaritons at milli-Kelvin temperatures.** *M.P. Weides*[1,2], I. Boventer[1], J. Krause[2], M. Pfirrmann[2], A. Schneider[2] and M. Kläui[1] *1. Physics, Johannes Gutenberg - University Mainz, Mainz, Germany; 2. Institute of Physics, Karlsruhe Institute of Technology, Karlsruhe, Germany*

**11:18**

**EB-13**. **Magnonics at Dilution Temperatures in a Planar Hybrid Magnonic/Superconducting Circuit.** *A.F. Van Loo*[1], R.G. Morris[1], S. Kosen[1] and A.D. Karenowska[1] *1. Physics, University of Oxford, Oxford, United Kingdom*

THURSDAY
MORNING
8:30

LA GALERIES 1-2

## Session EC

# MAGNETIZATION DYNAMICS II: DOMAINS AND ULTRAFAST EFFECTS

Grégoire de Loubens, Chair
CEA Saclay, Gif-sur-Yvette, France

**8:30**

**EC-01**. **Control of Magnetic States in Metallic Ferromagnets with Surface Acoustics Waves.** *N. Statuto*[1], J. Hernàndez Ferras[1], M. Foerster[5], S. Finizio[3], A. Hernández-Mínguez[6], S. Lendinez[4,1], P. Santos[6], J. Fontcuberta[7], M. Kläui[2], L. Aballe[5] and F. Macià[7,1] *1. Condensed Matter Physics Department, University of Barcelona, Barcelona, Spain; 2. Physics, Johannes Gutenberg - University Mainz, Mainz, Germany; 3. SYN, Paul Scherrer Institut, Villigen PSI, Switzerland; 4. Materials Science Division, Argonne National Laboratory, Lemont, IL; 5. ALBA synchrotron light facility, Cerdanyola del Valles, Spain; 6. Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany; 7. Institut de Ciencia de Materials de Barcelona (ICMAB-CSIC), Bellaterra, Spain*

**8:42**

**EC-02**. **Domain wall velocity shift in the high field regime induced by vertical Bloch line dynamics and disorder.** *M. Voto*[1], L. Lopez-Diaz[1] and L. Torres[1] *1. Dept. Fisica Aplicada, Universidad de Salamanca, Salamanca, Spain*

**8:54**

**EC-03**. **High-Frequency Magnetization Dynamics of Individual Atomic-Scale Magnets.** *S. Krause*[1], A. Sonntag[1], J. Hermenau[1], J. Friedlein[1] and R. Wiesendanger[1] *1. Department of Physics, University of Hamburg, Hamburg, Germany*

**9:06**

**EC-04**. **Crafting reconfigurable magnetic nanopatterns via thermally assisted scanning probe lithography.** ***(Invited)*** *E. Albisetti*[1], D. Petti[1], M. Pancaldi[4], M. Madami[2], S. Tacchi[5,2], J. Curtis[6], W.P. King[7], A. Papp[3], G. Csaba[3], W. Porod[3], P. Vavassori[4], E. Riedo[8] and R. Bertacco[1] *1. Dipartimento di Fisica, Politecnico di Milano, Milano, Italy; 2. Dipartimento di Fisica e Geologia, Università di Perugia, Perugia, Italy; 3. University of Notre Dame, South Bend, IN; 4. CIC nanoGUNE Consolider, San Sebastian, Spain; 5. Istituto Officina dei Materiali del CNR (CNR-IOM), Perugia, Italy; 6. School of Physics, Georgia Institute of Technology, Atlanta, GA; 7. Department of Mechanical Science and Engineering, University of Illinois Urbana-Champaign, Urbana, IL; 8. CUNY-Advanced Science Research Center and City College New York, City University of New York, New York, NY*

**9:42**

**EC-05**. **Angular Dependent Magnetization Dynamics of Kagome Artificial Spin Ice Incorporating Topological Defects.** *V.S. Bhat*[1], F. Heimbach[2], I. Stasinopoulos[2] and D. Grundler[1] *1. Materials Science and Engineering, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland; 2. Physik Department E10, Technische Universität München, Garching, Germany*

**9:54**

**EC-06**. **Stochastic Dynamics Of Strongly-Bound Magnetic Vortex Pairs.** *A. Bondarenko*[1,2], E. Holmgren[1], B.C. Koop[1], T. Descamps[1], B. Ivanov[2] and V. Korenivski[1] *1. Nanostructure Physics, KTH Royal Institute of Technology, Stockholm, Sweden; 2. Institute of Magnetism, Kyiv, Ukraine*

**10:06**

**EC-07**. **Characterizing the magnetization processes in magnetic wires with dynamic FORC diagrams.** *D. Cimpoesu*[1], I. Dumitru[1] and A. Stancu[2] *1. Physics, Alexandru Ioan Cuza University of Iasi, Iasi, Romania; 2. Department of Physics, Alexandru Ioan Cuza University of Iasi, Iasi, Romania*

**10:18**

**EC-08**. **Pump-Probe Holographic Imaging of Nanoscale Magnetic Domains.** S. Schleitzer[1], L. Müller[1], *A. Philippi-Kobs*[1,5], W. Roseker[1], C. Gutt[3], M.H. Berntsen[1,6], B. Pfau[4], D. Weder[4], J. Geilhufe[7], C. von Korff Schmising[4], B. Vodungbo[8], J. Gautier[8], K. Li[9], G. Malinowski[2], B. Tudu[9], F. Capotondi[10], E. Pedersoli[10], M. Kiskinova[10], J. Lüning[9], S. Eisebitt[4,7] and G. Grübel[1,5] *1. Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany; 2. Laboratoire de Physique des Solides, CNRS, Université Paris-sud, Orsay, France; 3. Universität Siegen, Siegen, Germany; 4. TU Berlin, Berlin, Germany; 5. The Hamburg Centre of Ultrafast Imaging, Hamburg, Germany; 6. KTH Royal Institute of Technology, Kista, Sweden; 7. Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Berlin, Germany; 8. Laboratoiré d'Optique Appliqué, Palaiseau, France; 9. Laboratoiré de Chimie Physique Matière et Rayonnement, Paris, France; 10. Elettra-Sincrotrone Trieste, Trieste, Italy*

**10:30**

**EC-09**. **Indirect excitation of ultrafast demagnetization: the role of hot electrons.** *G. Malinowski*[1], N. Bergeard[2], T. Ferte[2], A. Hillion[1], M. El Hadri[1], M. Hehn[1], C. Boeglin[2] and S. Mangin[1] *1. Institut Jean Lamour - CNRS - Université de Lorraine, Vandoeuvre-lès-Nancy, France; 2. IPCMS, Strasbourg, France*

**10:42**

**EC-10**. **Terahertz Radiation Driven Dynamics of Magnetic Domain Structures Probed by Free-Electron Laser Light.** *L. Müller*[1], M.H. Berntsen[4], S. Schleitzer[1], W. Roseker[1], F. Lehmkühler[1], R. Rysov[1], N. Stojanovic[5], T. Golz[5], A. Kobs[2], K. Bagschik[3], J. Wagner[3], R. Frömter[3], C. Gutt[6], H. Oepen[3] and G. Grübel[1] *1. FS-CXS, DESY, Hamburg, Germany; 2. Institute of Applied Physics, University of Hamburg, Hamburg, Germany; 3. Institute of Nanostructure and Solid State Physics, University of Hamburg, Hamburg, Germany; 4. KTH, Stockholm, Sweden; 5. FS-FL, DESY, Hamburg, Germany; 6. Universität Siegen, Siegen, Germany*

**10:54**

**EC-11**. **Ultrafast Laser Induced Spin Dynamics in RE-TM Alloys in Magnetic Fields up to 30T.** *J.J. Becker*[1], A. Tsukamoto[2], A. Kirilyuk[1], J.C. Maan[3], T. Rasing[1], P.C. Christianen[3] and A. Kimel[1] *1. Institute for Molecules and Materials, Radboud University, Nijmegen, Netherlands; 2. Electronic Engineering, College of Science and Technology Nihon University, Funabashi, Japan; 3. High Field Magnet Laboratory (HFML - EMFL), Radboud University, Nijmegen, Netherlands*

**11:06**

**EC-12**. **Ultrafast Demagnetization Dynamics in CoDy Alloys by TR-XMCD: Direct and Indirect Excitations.** *T. Ferté*[1], N. Bergeard[1], E. Terrier[1], M. Hehn[2], G. Malinowski[3], L. Le Guyader[4], K. Holldack[5] and C. Boeglin[1] *1. IPCMS, Strasbourg, France; 2. Institut Jean Lamour, Vandoeuvre les nancy, France; 3. P2M, Institut Jean Lamour, Vandoeuvre-Lès-Nancy, France; 4. European XFEL, Hambourg, Germany; 5. Institute Methods and Instrumentation for Synchrotron Radiation Research, Berlin, Germany*

11:18

**EC-13**. **Element specific study of demagnetization in a broad range of $Fe_{1-x}Ni_x$ alloys using a high harmonic generation source.** *S. Jana*[1], R. Knut[1], R. Stefanuik[1], M. Ahlberg[2], S. Troisi[1], J. Terschlusen[1], Y. Pogoryelov[1], R. Malik[1], J. Åkerman[2], J. Söderström[1] and O. Karis[1] *1. Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 2. University of Gothenburg, Gothenburg, Sweden*

THURSDAY MORNING 8:30 — LA GALERIES 3

## Session ED

# MULTIFERROIC THIN FILMS, TRANSPORT AND MAGNETOELECTRIC COMPOSITES

Brandon Howe, Chair

Air Force Research Lab, Wright Patterson Air Force Base, OH

8:30

**ED-01**. **Magnetostatic Coupling Effects in Small Magnetic Tunnel Junctions.** ***(Invited)*** *S. Majetich*[1] *1. Carnegie Mellon University, Pittsburgh, PA*

9:06

**ED-02**. **Voltage control of two magnon scattering and an enhanced ME coupling in multiferroic heterostructures.** X. Xue[1], *Z. Zhou*[1,2], M. Zhu[1], W. Ren[1], Z. Ye[1,3] and M. Liu[1] *1. School of Electrical and Information Engineering, Xian Jiaotong University, Xian, China; 2. Energy Systems Division, Argonne National Laboratory, Lemont, IL; 3. Department of Chemistry and 4D LABS, Simon Fraser University, Burnaby, BC, Canada*

9:18

**ED-03**. **Tuning of magnetic properties of ferromagnetic and ferroelectric coupled composites.** *A. Farheen*[1], G. Thirupathi[1] and R. Singh[1] *1. School of Physics, Univesity of Hyderabad, Hyderabad, India*

9:30

**ED-04**. **Spin dependent scattering in non-magnetic metallo-molecular interfaces.** *F. Al Ma'Mari*[1,2], T. Moorsom[1], A. Shengelaya[3], D. Daraselia[3], D. Japaridze[3], F. Herling[1], B. Hickey[1] and O. Cespedes[1] *1. Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. Physics, Sultan Qaboos University, Muscat, Oman; 3. Department of Physics, Faculty of Exact and Natural Sciences, Tbilisi State University, Tbilisi, Georgia*

**9:42**

**ED-05**. **$CoFe_2/Al_2O_3$/PMNPT multiferroic heterostructures by atomic layer deposition.** *Z. Zhou*[1], G. Grocke[1], A. Yanguas-Gil[1], X. Wang[2], Y. Gao[2], N.X. Sun[2], B.M. Howe[3] and X. Chen[1] *1. Energy Systems Division, Argonne National Laboratory, Lemont, IL; 2. ECE, Northeastern University, Boston, MA; 3. Materials and Manufacturing Directorate, Air Force Research Lab, Wright Patterson Air Force Base, OH*

**9:54**

**ED-06**. **Ionic Liquid Gating Control of Interfacial Magnetism.** S. Zhao[1], Z. Zhou[1,2], B. Peng[1], Q. Yang[1], Y. Zhang[1], W. Ren[1], Z. Ye[1,3] and *M. Liu*[1] *1. School of Electrical and Information Engineering, Xian Jiaotong University, Xian, China; 2. Energy Systems Division, Argonne National Laboratory, Chicago, IL; 3. Department of Chemistry and 4D LABS, Simon Fraser University, Burnaby, BC, Canada*

**10:06**

**ED-07**. **Giant magnetoimpedance effect in amorphous FeNiNbB-based bilayer and trilayer ribbons.** F. Andrejka[1], J. Marcin[1], P. Svec[2] and *I. Skorvanek*[1] *1. Magnetism, Institute of Experimental Physics Slov. Acad. Sci., Kosice, Slovakia; 2. Institute of Physics, Slov. Acad. Sci., Bratislava, Slovakia*

**10:18**

**ED-08**. **Imaging of magnetoelectric coupling mediated by entangled ferroelastic domain and polar domain walls in non-polar materials.** *B. Casals*[1], A. Casiraghi[2], D. López González[2], S.J. Hämäläinen[2], V. Skumryev[1,3], V. Laukhin[1,3], X. Granados[1], E. K. H. Salje[4], J. Fontcuberta[1], S. van Dijken[2] and G. Herranz[1] *1. Institut de Ciència de Materials de Barcelona ICMAB-CSIC, Bellaterra, Spain; 2. NanoSpin, Department of Applied Physics, Aalto University School of Science, FI-00076 Aalto, Finland; 3. ICREA, Barcelona, Spain; 4. Department of Earth Sciences, University of Cambridge, Cambridge, United Kingdom*

**10:30**

**ED-09**. **Exchange bias in $Ba_{0.4}Sr_{0.6}TiO_3/La_{0.7}Sr_{0.3}MnO_3$ heterostructures.** *S. Singamaneni*[2,1], J.T. Prater[1] and J. Narayan[1] *1. Materials Science and Engineering, North Carolina State University, Raleigh, NC; 2. Physics, University of Texas, El Paso, El Paso, TX*

**10:42**

**ED-10**. **Modeling Temperature Dependent Exchange Bias in Systems with Magnetoelectric Chromia.** *R. Ahmed*[1] and R.H. Victora[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN*

**10:54**

**ED-11**. **Large electric-field control of perpendicular magnetic anisotropy in strained [Co/Ni] / PZT heterostructures.** *D.B. Gopman*[1], C. Dennis[1], Y.L. Iunin[3,1], M. Staruch[2], P. Finkel[2] and R. Shull[1] *1. Materials Science & Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD; 2. Materials Science and Technology, Naval Research Laboratory, Washington, DC; 3. Institute of Solid State Physics, Russian Academy of Sciences, Chernogolovka, Russian Federation*

**11:06**

**ED-12**. **Withdrawn**

THURSDAY MORNING 8:30 — LA GALERIES 4-5

## Session EE

# VOLTAGE CONTROLLED MAGNETISM II

Dafiné Ravelosona, Chair
Institut d'Electronique Fondamentale, Orsay, France

**8:30**

**EE-01**. **N-type carrier-induced ferromagnetic semiconductor and electrical control of ferromagnetism by wavefunction engineering.** ***(Invited)*** *L. Anh*[1], P. Nam Hai[2,3], Y. Kasahara[4,5], Y. Iwasa[4,6] and M. Tanaka[1,3] *1. Department of Electrical Engineering and Information Systems, University of Tokyo, Tokyo, Japan; 2. Department of Physical Electronics, Tokyo Institute of Technology, Tokyo, Japan; 3. Center for Spintronics Research Network, University of Tokyo, Tokyo, Japan; 4. QPEC & Department of Applied Physics, University of Tokyo, Tokyo, Japan; 5. Department of Physics and Astronomy, Kyoto University, Kyoto, Japan; 6. RIKEN Center for Emergent Matter Science, Wako, Japan*

**9:06**

**EE-02**. **Spin-Orbitronics with Ferroelectric Rashba Semiconductors.** *R. Bertacco*[1], C. Rinaldi[1], S. Varotto[1], J. Slawinska[2], D. Di Sante[2,3], J. Rojas-Sánchez[4], L. Vila[5], M. Asa[1], M. Cantoni[1], J. George[6], R. Calarco[7], S. Picozzi[2] and A. Fert[8] *1. Department of Physics, Politecnico di Milano, Milano, Italy; 2. CNR-SPIN, Consiglio Nazionale delle Ricerche, Chieti, Italy; 3. Universitaet Wuerzburg, Wuerzburg, Germany; 4. Unité Mixte de Physique, CNRS, Thales, Palaiseau, France; 5. INAC–SP2M, Université Grenoble Alpes and CEA, Grenoble, France; 6. Unité Mixte de Physique CNRS Thales, CNRS, Palaiseau, France; 7. Paul-Drude-Institut für Festkörperelektronik, Berlin, Germany; 8. CNRS/Thales, University Paris-Sud, Palaiseau, France*

9:18

**EE-03**. **Electric field control of magnetic skyrmion bubbles nucleation and annihilation.** *A. Bernand-Mantel*[1,2], M. Schott[1,2], J. Vogel[1,2], S. Pizzini[1,2], L. Ranno[1,2], H. Bea[3,4] and D. Givord[1,2] *1. Institut Néel, CNRS, Grenoble, France; 2. Institut Néel, Univ. Grenoble Alpes, Grenoble, France; 3. SPINTEC, CNRS, Grenoble, France; 4. INAC-SPINTEC, CEA, Grenoble, France*

9:30

**EE-04**. **Direct Probe of Voltage-induced Fe Oxidation Effects on Spin Transport Property of the Fe/ZnO Ferromagnet-Semiconductor Device.** *S. Chang*[1], S. Lo[1], P. Chang[3], W. Lin[2] and Y. Tseng[1] *1. Materials Science & Engineering, National Chiao-Tung University, Hsin-Chu, Taiwan; 2. Department of Physics, National Taiwan Normal University, Taipei, Taiwan; 3. National Taiwan Normal University, Taipei, Taiwan*

9:42

**EE-05**. **Voltage controlled magnetism in Pt/Co/$GdO_x$ structures.** *C. Bi*[1], M. Xu[1], H. Almasi[1], T. Newhouse-Illige[1] and W. Wang[1] *1. Department of Physics, University of Arizona, Tucson, AZ*

9:54

**EE-06**. **Electric Field Control of Magnetization Direction in Ultrathin FeRh/MgO Bilayers across Metamagnetic Transition.** *N. Kioussis*[1], G. Zheng[1,2], S. Ke[2], M. Miao[1], J. Kim[1] and R. Ramesh[3] *1. Physics, California State University Northridge, Northridge, CA; 2. School of Physics Science and Engineering, Tongji University, Shanghai, China; 3. Materials Sciences Division, University of California, Berkeley, CA*

10:06

**EE-07**. **Enhancement of Voltage-Controlled Magnetic Anisotropy by Insertions at CoFeB|MgO Interface.** *X. Li*[1], D. Wu[2], G. Yu[1], K.L. Wang[1], C. Grezes[1], Z. Zhang[2], P. Khalili[1,3] and K.L. Wang[1] *1. Electrical Engineering, UCLA, Los Angeles, CA; 2. Department of Optical Science and Engineering, Fudan University, Shanghai, China; 3. Inston Inc., Los Angeles, CA*

10:18

**EE-08**. **Voltage control of magnetic anisotropy in Pt/Co/MgO system with ionic liquid gate.** *T. Hirai*[1], T. Koyama[1], A. Obinata[1], Y. Hibino[1], K. Miwa[2], S. Ono[2], M. Kohda[3] and D. Chiba[1] *1. Department of Applied Physics, The University of Tokyo, Bunkyo, Japan; 2. Central Research Institute of Electric Power Industry, Yokosuka, Japan; 3. Department of Materials Science, Tohoku University, Sendai, Japan*

10:30

**EE-09**. **An EXAFS Study of an FePt/MgO Junction to Investigate Voltage-Induced Atomic Displacement.** *M. Suzuki*[1], T. Tsukahara[2], R. Miyakaze[2], T. Furuta[2], K. Shimose[2], K. Matsuda[2], K. Tanaka[2], M. Goto[2], T. Nozaki[3], S. Yuasa[3], Y. Suzuki[2,3] and S. Miwa[2] *1. Japan Synchrotron Radiation Research Institute (JASRI), Sayo, Japan; 2. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 3. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

**10:42**

**EE-10**. **Deterministic switching of PMA by electric field control of spin reorientation transition in ultrathin $(Co/Pt)_3$/PMN-PT (011) heterostructures.** B. Peng[1], T. Nan[2], Q. Yang[1], X. Wang[2], Y. Zhang[1], S. Zhao[1], W. Ren[1], Z. Ye[1,3], N.X. Sun[1,2] and *M. Liu*[1] *1. Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, Xi'an, China; 2. Electrical and Computer Engineering Department, Northeastern University, Boston, MA; 3. Department of Chemistry and 4D LABS, Simon Fraser University, Burnaby, BC, Canada*

**10:54**

**EE-11**. **Influence of ultrathin Cr insertion on perpendicular magnetic anisotropy and its electric field induced change at Fe/MgO interface.** *A. Koziol-Rachwal*[1,2], T. Nozaki[1], V. Zayets[1], H. Kubota[1], A. Fukushima[1], S. Yuasa[1] and Y. Suzuki[1,3] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Faculty of Physics and Applied Computer Science, AGH University of Science and Technology, Kraków, Poland; 3. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan*

**11:06**

**EE-12**. **Tuning Voltage Induced Precessional Switching in CoFeB-MgO Perpendicular Magnetic Tunnel Junctions.** *M. Xu*[1], H. Almasi[1], C. Bi[1], Y. Xu[1] and W. Wang[1] *1. Department of Physics, University of Arizona, Tucson, AZ*

**11:18**

**EE-13**. **Voltage control of magnetic properties in $BaTiO_3$ heterostructures.** O. Rousseau[1], R. Weil[1], S. Rohart[1] and *A. Mougin*[1] *1. CNRS, Univ. Paris-Sud, Universite Paris-Saclay, Laboratoire de Physique des Solides, Orsay, France*

THURSDAY MORNING 8:30 — STUDIO 1-2

## Session EF
# MAGNETORESISTANCE I: GMR AND TMR

Olaf van 't Erve, Chair
Naval Research Laboratory, Washington, DC

**8:30**

**EF-01**. **Stability of a highly spin polarized surface resonance of $Co_2MnSi$ at spin-valve interfaces.** *C. Lidig*[1], A. Kronenberg[1], A. Hloskovsky[2], H. Elmers[1], J.G. Schoenhense[1], M. Kläui[1] and M. Jourdan[1] *1. Institut für Physik, Johannes Gutenberg Universität Mainz, Mainz, Germany; 2. Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany*

**8:42**

**EF-02**. **Temperature and Spacer-layer Thickness Dependence in $Co_2Fe_{0.4}Mn_{0.6}Si/Ag\text{-}Mg/Co_2Fe_{0.4}Mn_{0.6}Si$ CPP-GMR Devices.** *T. Kubota*[1,2], Y. Ina[1], Z. Wen[1] and K. Takanashi[1,2] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Center for Spintronics Research Network, Tohoku University, Sendai, Japan*

**8:54**

**EF-03**. **Magnetotransport properties in the magnetic junctions with a $Cu(In_{0.8}Ga_{0.2})Se_2$ semiconductor spacer and $Co_2Fe(Ga_{0.5}Ge_{0.5})$ ferromagnetic electrodes.** *K. Mukaiyama*[1], K. Masuda[1], S. Kasai[1,2], Y. Takahashi[1], P. Cheng[1], I. Ikhtiar[1], Y. Miura[3,1], T. Ohkubo[1], S. Mitani[1] and K. Hono[1] *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Center for Emergent Matter, RIKEN, Wako, Japan; 3. Electrical Engineering and Electronics, Kyoto Institute of Technology, Kyoto, Japan*

**9:06**

**EF-04**. **Heusler Alloys with bcc Tungsten Seed Layers for GMR Junctions.** *W.J. Frost*[1] and A. Hirohata[2] *1. Department of Electronics, University of York, York, United Kingdom; 2. University of York, York, United Kingdom*

**9:18**

**EF-05**. **$Fe_2MnGe$: A comparison of bulk and thin film samples.** *B.D. Clark*[1], S. Keshavarz[1], N. Naghibolashrafi[1], R. Martens[1], W. Butler[1], P.R. LeClair[1], A. Gupta[1], G. Mankey[1] and S. Gupta[1] *1. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, AL*

**9:30**

**EF-06**. **Giant spin-valve effect in (Ga,Fe)Sb/(In,Fe)As spin diodes.** *T. Otsuka*[1], Y. Arakawa[1], M. Tanaka[2,3] and P. Nam Hai[1] *1. Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Tokyo, Japan; 2. Department of Electrical Engineering and Information Systems, Univ. of Tokyo, Tokyo, Japan; 3. Center for Spintronics Research Network, The University of Tokyo, Tokyo, Japan*

**9:42**

**EF-07**. **Deposition and Spin Polarization Measurement of $Fe_4N$ (001) Thin Film on Ag and Cr Underlayer.** *H. Li*[1], X. Li[1], D. Zhang[2], T. Chen[3] and J. Wang[2] *1. University of Minnesota, Minneapolis, MN; 2. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN; 3. Physics, Arizona State University, Tempe, AZ*

**9:54**

**EF-08**. **Enhancement in Low-field Sensitivity of TMR in 2D Co/AlF Granular Films.** *Y. Cao*[1], Y. Zhang[1], S. Ohnuma[1,2], N. Kobayashi[2] and H. Masumoto[1] *1. Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Sendai, Japan; 2. Research Institute for Electromagnetic Materials, DENJIKEN, Sendai, Japan*

10:06

**EF-09**. **Developing perpendicular magnetic tunnel junctions with $L1_0$-phase FePd free layer.** *D. Zhang*[1], K. Schliep[2], P. Quarterman[1], Y. Lv[1], H. Li[2], J. Chen[1], Z. Zhao[1], X. Chao[1], M. Jamali[1] and J. Wang[1] *1. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN; 2. Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN*

10:18

**EF-10**. **Spontaneous Room Temperature Exchange Bias Formation in Polycrystalline IrMn Based Spin Valves.** *A. Migliorini*[1], M. Muñoz[2], J. Fernandez Cunnado[3], J. Camarero[4], C. Aroca[1] and J.L. Prieto[1] *1. Instituto de Sistemas Optoelectrónicos y Microtecnología-ISOM. Universidad Politécnica de Madrid., Madrid, Spain; 2. Instituto de Microelectrónica de Madrid, IMM-CSIC, Madrid, Spain; 3. Magnetism, IMDEA Nanociencia, Madrid, Spain; 4. Universidad Autonoma de Madrid & IMDEA Nanoscience, Madrid, Spain*

10:30

**EF-11**. **Spin Scattering in Pt and at its Interfaces.** *R. Freeman*[1], A. Zholud[1] and S. Urazhdin[1] *1. Physics, Emory University, Decatur, GA*

10:42

**EF-12**. **Continuous control of spin polarization using a magnetic field.** J. Gifford[1], G. Zhao[1], B. Li[1], B. Tracy[1], J. Zhang[1], D. Kim[1], D. Smith[1] and *T. Chen*[1] *1. Physics, Arizona State University, Tempe, AZ*

10:54

**EF-13**. **Theory of spin loss at metallic interfaces.** *K. Belashchenko*[1], A. Kovalev[1] and M. van Schilfgaarde[2] *1. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE; 2. Department of Physics, King's College London, London, United Kingdom*

11:06

**EF-14**. **Free Functionality Design in Magneto-Resistive Multilayer Devices.** *K. Schlage*[1], L. Bocklage[1,2], D.J. Erb[1], H. Wille[1] and R. Röhlsberger[1,2] *1. Photon Science, Deutsches Elektronen-Synchrotron, Hamburg, Germany; 2. The Hamburg Centre for Ultrafast Imaging CUI, Hamburg, Germany*

11:18

**EF-15**. **Kondo-like behaviour and GMR effect in granular Co-Cu microwires.** V. Zhukova[1,3], J. Mino[1,4], J. del Val[1], R. Varga[4], G. Martinez[5], M. Baibich[5] and *A.P. Zhukov*[1,2] *1. Phys. Mater., UPV/EHU, San Sebastián, Spain; 2. Ikerbasque, Bilbao, Spain; 3. Dept. Appl. Phys., University of Basque Country, San Sebastian, Spain; 4. Institute of Physics, Faculty of Science, UPJS, Kosice, Slovakia; 5. UFRGS, Instituto de Fisica, C.P. 15051, 91501-970, Porto Alegre, Brazil*

## Session EG
# ELEMENTALLY MODIFIED INTERMETALLICS

Semih Ener, Chair
Technische Universität Darmstadt, Darmstadt, Germany

**8:30**

**EG-01**. **4f electronic clouds in rare-earth based magnets: first-principles study with Wannier functions.** *H. Tsuchiura*[1], M. Mišina[2], T. Yoshioka[1] and P. Novák[2] *1. Department of Applied Physics, Tohoku University, Sendai, Japan; 2. Institute of Physics of ASCR, Prague, Czech Republic*

**8:42**

**EG-02**. **Role of granular microstructure on coercivity of nano- and microcrystalline Nd-Fe-B melt-spun magnets.** *J. Fidler*[1,2], G. Zickler[1,2] and A. Asali[2] *1. TU Vienna, Vienna, Austria; 2. Institute of Solid State Physics, TU Vienna, Vienna, Austria*

**8:54**

**EG-03**. **Enhanced coercivity related to the microstructure of the sintered Nd-Fe-B magnets with Ho addition.** *J. Di*[1], S. Guo[1], L. Chen[1], G. Ding[1], K. Chen[1], J. Song[1] and A. Yan[1] *1. Ningbo Institute of Material Technology and Engineering, Chinese Academy of Sciences, Ningbo, China*

**9:06**

**EG-04**. **The Status of Chines Permanent Magnet Industry and R&D Activities.** *S. Dong*[1] and W. Li[1] *1. Central Iron & Steel Research Institute, Beijing, China*

**9:18**

**EG-05**. **Permanent magnets based on exchange coupled nanocomposites.** *V. Nachbaur*[1], F. Ayadi[1], N. Maat[1], R. Larde[1], J. Juraszek[1] and J. Le Breton[1] *1. Normandie Univ. UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen, France*

**9:30**

**EG-06**. **Influence of cooling rate on structural and magnetic properties of $(Fe_{78}Nb_8B_{14})_{1-x}Tb_x$ alloys.** *G. Ziolkowski*[1], A. Chrobak[1], J. Klimontko[1], D. Chrobak[3] and R. Nirina[2] *1. Institute of Physics, University of Silesia, Katowice, Poland; 2. Institut des Molécules et des Matériaux du Mans, Université du Maine, Le Mans, France; 3. Institute of Materials Science, University of Silesia, Chorzów, Poland*

**9:42**

**EG-07**. **Where are Cobalt and Gallium in a Nd-Fe-Co-B Sintered Magnet?** *H. Chen*[1], F. Yun[1], Z. Ye[2], S. Ringer[3] and R. Zheng[1] *1. School of Physics, The University of Sydney, Sydney, NSW, Australia; 2. DMEGC, Dongyang, China; 3. Australian Institute for Nanoscale Science and Technology (AINST), The University of Sydney, Sydney, NSW, Australia*

9:54

**EG-08**. **Direct observation of reversed magnetic domains induced by Cu and Al additions in a sintered Nd-Fe-B magnet.** *H. Chen*[1], Y. Yao[2], F. Yun[1], S. Ringer[3] and R. Zheng[1] *1. School of Physics, The University of Sydney, Sydney, NSW, Australia; 2. Electron Microscope Unit, Mark Wainwright Analytical Centre, The University of New South Wales, Sydney, NSW, Australia; 3. Australian Institute for Nanoscale Science and Technology (AINST), The University of Sydney, Sydney, NSW, Australia*

10:06

**EG-09**. **Magnetization reversal in Dy-diffused permanent magnets.** *J. Fischbacher*[1], L. Exl[2], T. Schrefl[1], H. Sepehri-Amin[3], T. Ohkubo[3] and K. Hono[3] *1. Danube University Krems, Wiener Neustadt, Austria; 2. Vienna University, Vienna, Austria; 3. Magnetic Materials Unit, NIMS, Tsukuba, Japan*

10:18

**EG-10**. **Coercivity enhancement in Nd-Fe-B(Nb-Cu) nanocrystalline alloys by grain boundary infiltration.** A. Martín-Cid[1], *D. Salazar*[1], J.S. Garitaonandia[1,3], R. Madugundo[1], J.M. Barandiaran[1,3] and G. Hadjipanayis[2] *1. BCMaterials, Derio, Spain; 2. Physics and Astronomy, University of Delaware, Newark, DE; 3. University of the Basque Country, Bilbao, Spain*

10:30

**EG-11**. **Enhancement of Coercivity in $Sm(CoFeCuZr)_z$ Permanent Magnets by Doping Cu Powders.** *Y. Wang*[1], M. Yue[1], S. Su[1], D. Zhang[1] and W. Liu[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China*

10:42

**EG-12**. **Structure and Magnetic Properties of $(Nd,Tb)_2Fe_{14}B$ Nanoflakes Prepared by Surfactant-assisted Ball Milling.** *H. Li*[1], M. Yue[1], Y. Li[1], W. Liu[1], D. Zhang[1] and Q. Lu[1] *1. College of Materials Science and Engineering, Beijing University of Technology, Beijing, China*

10:54

**EG-13**. **High electrical resistivity Nd-Fe-B die-upset magnet doped with eutectic $DyF_3$–LiF salt mixture.** *K. Kim*[1], H. Kwon[1], D. Kim[2], J. Lee[3] and J. Yu[3] *1. Pukyong National University, Busan, The Republic of Korea; 2. Star-group Ind. Co., Daegu, The Republic of Korea; 3. Korea Institute of Materials Science, Changwon, The Republic of Korea*

11:06

**EG-14**. **Mechanical anisotropy in $Sm(CoFe_{0.09}Cu_{0.09}Zr_x)_{7.68}$ (x=0.020~0.035) magnets.** *F. Yanping*[1,2], L. Liu[1], Z. Liu[1], M. Li[1], C. Wang[1,3], Y. Sun[1], D. Lee[1,4] and A. Yan[1] *1. Province Key Laboratory of Magnetic Materials and Application Technology, Ningbo Institute of Material Technology and Engineering, Ningbo, China; 2. School of Material Science and Engineering, Chongqing University of Technology, Chongqing, China; 3. University of Science and Technology of China, HeFei, China; 4. University of Dayton, Dayton, OH*

## Session EH
# MAGNETO-CALORIC MATERIALS II
Yaroslav Mudryk, Chair
Iowa State University, Ames, IA

**8:30**

**EH-01**. **Optimal Temperature Range for Determining Magnetocaloric Magnitudes from Heat Capacity.** *L.M. Moreno-Ramírez*[1], J.S. Blázquez[1], J. Law[1], V. Franco[1] and A. Conde[1] *1. Condensed Matter Physics, Sevilla University, Sevilla, Spain*

**8:42**

**EH-02**. **Analysis of the thermal and magnetic hysteresis of Heusler type magnetocaloric alloys.** *V. Franco*[1], J.S. Blázquez[1], A. Conde[1], T. Gottschall[2], K.P. Skokov[2] and O. Gutfleisch[2] *1. Condensed Matter Physics, Sevilla University, Sevilla, Spain; 2. FM, TU Darmstadt, Darmstadt, Germany*

**8:54**

**EH-03**. **Platinum induced stabilization of the tetragonal phase in epitaxial NiPtMnGa films.** L. Helmich[1], *N. Teichert*[1], F. Scheibel[2], R. Meckenstock[2], A. Gruenebohm[2], M. Acet[2] and A. Huetten[1] *1. Physics Department, Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany; 2. Faculty of Physics and CENIDE, University of Duisburg-Essen, Duisburg, Germany*

**9:06**

**EH-04**. **Microstructure and magnetocaloric effect of freestanding Ni-Co-Mn-Al thin films.** *N. Teichert*[1] and A. Huetten[1] *1. Department of Physics, Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany*

**9:18**

**EH-05**. **The irreversible structural change in $Mn_{1.1}Fe_{0.9}P_{0.8}Ge_{0.2}$: A new magnetic driver?** X. Liu[1], *D. Ryan*[2], L. Cranswick[3], D. Liu[4], Y. Ming[4] and Z. Altounian[2] *1. Physics Department, McGill University, Montreal, QC, Canada; 2. McGill University, Montreal, QC, Canada; 3. Canadian Neutron Beam Centre, Chalk River, ON, Canada; 4. Beijing University of Technology, Beijing, China*

**9:30**

**EH-06**. **Residual stress induced stabilization of martensite phase and its effect on the magneto-structural transition in Mn rich Ni-Mn-In/Ga magnetic shape memory alloys.** *S. Singh*[1], P. Kushwaha[2], F. Scheibel[3], H. Liermann[4], S. Barman[5], M. Acet[3], C. Felser[2] and D. Pandey[6] *1. Solid state Chemistry, Max-Planck Institute For Chemical Physics of Solids, Dresden, Germany; 2. Max Planck Institute for Chemical Physics for Solids, Dresden, Germany; 3. Physics, Universität Duisburg-Essen, Duisburg, Germany; 4. Deutsches Elektronen Synchrotron (DESY), Hamburg, Germany; 5. UGC-DAE CSR, Indore, India; 6. Indian Institute of Technology (Banaras Hindu University), Varanasi, India*

**9:42**

**EH-07**. **Realization of room temperature magnetostructural transition and magnetocaloric/elastocaloric effects in NiMnGa alloys by isoelectronic substitution of In for Ga.** J. Wang[1], *Q. Yu*[1], J. Liu[1], T. Zhang[1] and C. Jiang[1] *1. School of Materials Science and Engineering, Beihang University, Beijing, China*

**9:54**

**EH-08**. **The role of intra-layer Mn-Mn distances in the metamagnetism of the CoMnSi compound.** *R. Kou*[1,2], J. Gao[1], Y. Ren[2], S.M. Heald[2], B.L. Fisher[3] and C. Sun[2] *1. Key Laboratory of Electromagnetic Processing of Materials (Ministry of Education), Northeastern University, Shenyang, China; 2. Advanced Photon Source, Argonne National Laboratory, Westmont, IL; 3. Center for Nanoscale Materials, Argonne National Laboratory, Argonne, IL*

**10:06**

**EH-09**. **Effect of B-doping on the structure and magnetocaloric properties of plate-shaped $La_{0.6}Pr_{0.4}Fe_{11.4}Si_{1.6}H_x$ sintered in high-pressure $H_2$ atmosphere.** *N. Sun*[1] *1. School of Science, Shenyang Ligong University, Shenyang, China*

**10:18**

**EH-10**. **Exploring the hydrogen sorption kinetics in magnetocaloric La-Fe-Si structure via *in-situ* neutron diffraction.** *X. Hai*[1,2], C. Mayer[2], V. Nassif[1], F. Porcher[3] and S. Miraglia[1] *1. Condensed Matter and Functional Materials, Néel Institute, Grenoble, France; 2. Erasteel SAS, Paris, France; 3. Laboratoire Léon Brillouin, Gif sur Yvette, France*

**10:30**

**EH-11**. **Wide temperature range magnetocaloric effect in novel $Gd_3Fe_4Si$ multiphase alloy.** *T.P. Rashid*[1], I. Curlik[2], S. Ilkovic[2], M. Reiffers[2] and R. Nagalakshmi[1] *1. Physics, National Institute of Technology, Tiruchirappalli, India; 2. Faculty of Humanities and Natural Sciences, Presov University, Presov, Slovakia*

10:42

**EH-12**. **Gadolinium thin films as benchmark for magneto-caloric thin films.** L. Helmich[1], M. Bartke[1], *N. Teichert*[1], M. Dunz[1], B. Schleicher[2], A. Waske[2], J. Beik Mohammadi[3], C.K. Mewes[3], T. Mewes[3] and A. Huetten[1] *1. Physics Department, Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany; 2. IFW Dresden, Dresden, Germany; 3. Physics and Astronomy / MINT, University of Alabama, Tuscaloosa, AL*

10:54

**EH-13**. **Magnetocaloric Effect of Gd-based Microwires from Binary to Quaternary System.** *F. Qin*[1], Y. Wang[1], Y. Wang[1], H. Wang[1] and H. Peng[1] *1. Materials Science and Engineering, Zhejiang University, Hangzhou, China*

11:06

**EH-14**. **Transition metal borides – Potential magnetocaloric materials for thermomagnetic energy harvesting.** *M. Fries*[1], Z. Gercsi[2], S. Ener[1], T. Gottschall[1], D. Benke[1], K.P. Skokov[1] and O. Gutfleisch[1] *1. Funktionale Materialien, Materialwissenschaft, TU Darmstadt, Darmstadt, Germany; 2. Physics, Trinity College Dublin, Dublin, Ireland*

11:18

**EH-15**. **Heusler Compounds for Waste Heat- to Electric Power Conversion Using Thermomagnetic Motors.** *M. Maschek*[1], X. You[1], N. van Dijk[1], N. Vida[2], C. Gossweiler[3], D. Wymann[2,3], D. Studer[3,2], R. Brunner[3,2] and E. Brück[1] *1. Fundamental Aspects of Materials and Energy (FAME), Delft University of Technology, Delft, Netherlands; 2. Swiss Blue Energy, Bad Zurzach, Switzerland; 3. Institute of Thermal and Fluid Engineering, University of Applied Sciences and Arts Northwestern Switzerland, Windisch, Switzerland*

THURSDAY MORNING 8:30 — STUDIO 3-4

## Session EI
# ELECTRONIC STRUCTURE AND MAGNETIC SEMICONDUCTORS

Vlado Lazarov, Chair
University of York, York, United Kingdom

8:30

**EI-01**. **Direct evidence for a helical spin-locked Dirac state in the Half-Heusler compound YPtBi.** ***(Invited)*** *M. Jourdan*[1], A. Kronenberg[1], J. Braun[3], J. Minar[3], H. Elmers[1], D. Kutnyakhov[1], A. Zaporozhchenko[1], R. Wallauer[1], S. Chernov[1], K. Medjanik[1], J.G. Schoenhense[1], M. Kläui[1], S. Chadov[2] and H. Ebert[3] *1. Institute of Physics, Johannes Gutenberg-University Mainz, Mainz, Germany; 2. Inorganic Chemistry, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 3. Chemistry Department, Ludwig-Maximilians-University Munich, Munich, Germany*

**9:06**

**EI-02**. **Influence of post-annealing on the structural and electronic properties of thin CoFe films.** *A. Gloskovskii*[1], S. Chadov[2], J. Hamrle[3], H. Elmers[4], Y. Sakuraba[5], K. Takanashi[6] and W. Drube[1] *1. Photon Science/DESY, Hamburg, Germany; 2. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 3. VSB–Technical University, Ostrava, Czech Republic; 4. Uni-Mainz, Mainz, Germany; 5. NIMS, Tsukuba, Japan; 6. Institute for Materials Research, Sendai, Japan*

**9:18**

**EI-03**. **Revealing the Hidden Structural Phase of FeRh.** *J. Kim*[1], R. Ramesh[2] and N. Kioussis[1] *1. Physics, California State University, Northridge, CA; 2. Materials Science & Engineering, University of California, Berkeley, CA*

**9:30**

**EI-04**. **Spin-resolved Band Structure of a Heisenberg Ferromagnet.** *T. Gerber*[1], M. Eschbach[1], E. Mlynczak[1], P. Lömker[1], P. Gospodaric[1], M. Gehlmann[1], R. Pentcheva[2], L. Plucinski[1], C.M. Schneider[1,2] and M. Müller[1,2] *1. Peter Grünberg Institute, PGI-6, Research Center Jülich, Jülich, Germany; 2. Faculty of Physics, University Duisburg-Essen, Jülich, Germany*

**9:42**

**EI-05**. **Giant perpendicular magnetic crystalline anisotropy of Ir-doped $\alpha$-$Fe_2O_3$: first-principles calculations.** *Y. Kitaoka*[1] and H. Imamura[1] *1. Spintronics Research Center, AIST, Tsukuba, Japan*

**9:54**

**EI-06**. **Role of Oxygen Vacancies in Fe-Doped NiO from *ab Initio* Calculations.** *J.E. Petersen*[1], L. Scolfaro[1], P. Borges[2] and W.J. Geerts[1] *1. Texas State University, San Marcos, TX; 2. Universidade de Vicosa, Minas Gerais, Brazil*

**10:06**

**EI-07**. **Electronic and Atomic Structure Study of Polar $Fe_3O_4$(111)/$SrTiO_3$(111) Interface.** *V. Lazarov*[1], Z. Nedelkoski[1], B. Kuerbanjiang[1], K. Matsuzaki[2], T. Susaki[2], L. Lari[1], D. Kepaptsoglou[3], Q.M. Ramasse[3], S. Tear[1] and K.P. McKenna[1] *1. Physics, University of York, York, United Kingdom; 2. Tokyo Institute of Technology, Yokohama, Japan; 3. SuperSTEM Laboratory, Daresbury, United Kingdom*

**10:18**

**EI-08**. **First-principles Study of the Residual Resistivity of Ni-based High Entropy Alloys.** *S. Mu*[1], G.M. Stocks[1], G. Samolyuk[1], S. Khan[1], C. Troparevsky[1], S. Zhao[1], M. Daene[2] and S. Wimmer[3] *1. Materials Science and Technology Division, Oak Ridge National Lab, Oak Ridge, TN; 2. Physical and Life Sciences, Lawrence Livermore National Laboratory, Livermore, CA; 3. Department of Chemistry, Ludwig-Maximilian-Universitaet, Muenchen, Germany*

**10:30**

**EI-09**. **Interplay of localization and magnetism in (Ga,Mn)As and (In,Mn)As.** *Y. Yuan*[1], M. Sawicki[2], T. Dietl[2], M. Helm[1] and S. Zhou[1] *1. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute of Physics, Polish Academy of Sciences, Warsaw, Poland*

**10:42**

**EI-10**. **The magnetic anisotropy of III-Mn-V ferromagnetic semiconductors prepared by ion implantation and pulsed laser melting.** *C. Xu*[1,3], Y. Yuan[1,3], M. Sawicki[2], R. Boettger[1], M. Helm[1,3] and S. Zhou[1] *1. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 2. Institute of Physics, Polish Academy of Sciences, Warszawa, Poland; 3. Technische Universität Dresden, Dresden, Germany*

**10:54**

**EI-11**. **Diluted magnetic semiconductors with narrow band gaps: Theoretical study of Mn-doped $BaZn_2As_2$ and $BaZn_2Sb_2$.** *B. Gu*[1] and S. Maekawa[1,2] *1. Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Japan; 2. ERATO, Japan Science and Technology Agency, Sendai, Japan*

**11:06**

**EI-12**. **Low Temperature Magnetic Hard Gap in $Pb_{1-x}Mn_xS$ Films.** *G. Rimal*[1] and J. Tang[1] *1. Physics & Astronomy, University of Wyoming, Laramie, WY*

**11:18**

**EI-13**. **The Effect of Paramagnetic Impurities in Transparent Conducting $BaSnO_3$ Thin Films.** *U.S. Alaan*[1,2], A.T. N'Diaye[3], P. Shafer[3], E. Arenholz[3] and Y. Suzuki[1,4] *1. Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA; 2. Department of Materials Science and Engineering, Stanford University, Stanford, CA; 3. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 4. Department of Physics and Applied Physics, Stanford University, Stanford, CA*

## Session EP
# MAGNETIC FLUIDS AND NANOPARTICLES APPLICATIONS (Poster Session)

Zoe Boekelheide, Chair
Lafayette College, Easton, PA

**EP-01**. **Monitoring Sedimentation of Magnetorheological Fluids Using a Vertical Axis Monitoring System with a Low Aspect Ratio Sensor Coil.** *M. Wen*[1,2], N.M. Wereley[1], J. Chambers[1] and M. Yu[2] *1. Dept. of Aerospace Engineering, University of Maryland, College Park, MD; 2. College of Optoelectronic Engineering, Chongqing University, Chongqing, China*

**EP-02**. **Using Mason Number to Predict MR Fluid Damper Performance from Limited Test Data.** *A. Becnel*[1] and N.M. Wereley[1] *1. Dept. of Aerospace Engineering, University of Maryland, College Park, MD*

**EP-03**. **Forced oscillatory motion of ferromagnetic particle chains under alternating external magnetic field.** *S. Lee*[1], J. Shim[2,3], S. Kim[1], H. Piao[4] and D. Kim[1] *1. Physics, Chungbuk National University, Cheongju, The Republic of Korea; 2. Physics & Center for Attosecond Science and Technology, Postech, Pohang, The Republic of Korea; 3. Max Planck POSTECH/KOREA Research Initiative, Max Planck Center for Attosecond Science, Pohang, The Republic of Korea; 4. School of Science, China Three Gorges University, Yichang, China*

**EP-04**. **Design and Test of a Magnetorheological Fluid-Based Universal Gripper.** Y. Choi[1], C. Hartzell[1] and *N.M. Wereley*[1] *1. Dept. of Aerospace Engineering, University of Maryland, College Park, MD*

**EP-05**. **Response time of magnetorheological suspensions and its dependence on Mason number.** *S.G. Sherman*[1] and N.M. Wereley[1] *1. Dept. of Aerospace Engineering, University of Maryland, College Park, MD*

**EP-06**. **Compressive Properties of Adaptive Magnetorheological Impact Foams.** *N.M. Wereley*[1] and Y. Choi[1] *1. Dept. of Aerospace Engineering, University of Maryland, College Park, MD*

**EP-07**. **Magneto-viscosity of Hydrothermal Synthesized Cu-Zn Ferrite Ferrofluids.** *N. Gautam*[1], G. Thirupathi[1] and R. Singh[1] *1. School of Physics, Univesity of Hyderabad, Hyderabad, India*

**EP-08**. **Recycling Magnets for Direct Reuse: an Ionic Liquid Approach.** D. Prodius[1], A. Mudring[1] and *C.I. Nlebedim*[1] *1. Critical Materials Institute, Ames Laboratory, US Department of Energy, Ames, IA*

**EP-09**. **Withdrawn**

**EP-10**. **Electroacoustic quantification of nanoparticle surface properties in applied magnetic fields.** *Y. Wroczynskyj*[1], P. Manna[1], J.H. Page[1], D. Miller[2] and J. van Lierop[1] *1. Physics and Astronomy, University of Manitoba, Winnipeg, MB, Canada; 2. Pharmacology and Therapeutics, University of Manitoba, Winnipeg, MB, Canada*

**EP-11**. **Development of Iron Quantification Method Using Nuclear Magnetic Resonance Relaxometer.** *J. Sherwood*[1], K. Lovas[1] and Y. Bao[1] *1. University of Alabama, Northport, AL*

**EP-12**. **Locomotive Characteristics of a Sphericon-Shaped Magnetic Millirobot Rolling on a Surface.** *S. Jeon*[1], D. Lee[1], K. Lee[1] and S. Kang[1] *1. Div. Mechanical and Automotive Engineering, Kongju National University, Cheonan, The Republic of Korea*

**EP-13**. **Magnetic light cloaking control in the marine planktonic copepod *Sapphirina*.** *H. Kashiwagi*[1], Y. Mizukawa[1], M. Iwasaka[1,2] and S. Ohtsuka[3] *1. AdSM, Hiroshima University, Higashi-Hiroshima, Japan; 2. Research Institute for Nanodevice and Bio Systems, Hiroshima University, Higashi-Hiroshima, Japan; 3. Graduate School of Biosphere Science, Hiroshima University, Higashi-Hiroshima, Japan*

**EP-14**. **Temperature dependence of induced magnetic anisotropy in $Co_{80-x-y}Fe_xMn_yNb_4B_{14}Si_2$ soft magnetic nanocomposites.** *A. Leary*[1], V. Keylin[2], P. Ohodnicki[3] and M.E. McHenry[1] *1. Carnegie Mellon University, Pittsburgh, PA; 2. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA; 3. National Energy Technology Laboratory, Pittsburgh, PA*

THURSDAY MORNING 9:30 — GRAND BALLROOM

### Session EQ

## 2D AND 3D NANOSTRUCTURED ARRAYS II (Poster Session)

Amalio Fernandez-Pacheco, Chair
University of Cambridge, Cambridge, United Kingdom

**EQ-01**. **Magnetostatic Interactions between CoFe Nanowires as a Tool for Probeing the Self-Ordering of Nanopores in Anodic Alumina.** *A. Esmaeily*[1], A. Razavian[1,3], M. Venkatesan[1] and M. Coey[2] *1. School of Physics and CRANN, Trinity College Dublin, Dublin, Ireland; 2. Trinity College, Dublin, Dublin, Ireland; 3. Institute of Nanoscience and Nanotechnology, University of Kashan, Kashan, The Islamic Republic of Iran*

**EQ-02**. **Frustrated Long-Range Magnetic Domain Structure in High-Density Nanowire Arrays.** *A. Grutter*[1], K.L. Krycka[1], M. Reddy[2], O. Tartakivska[4], E. Ortega[3], B.J. Kirby[1], A. Ponce[3], J. Borchers[1] and B. Stadler[2] *1. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD; 2. University of Minnesota, Minneapolis, MN; 3. Department of Physics and Astronomy, The University of Texas at San Antonio, San Antonio, TX; 4. Institute of Magnetism, National Academy of Sciences of Ukraine, Kiev, Ukraine*

**EQ-03**. **Fabrication, structural and Magnetic Properties of Electrodeposited $Fe_3Pt$ Nanowires and Nanotubes.** U. Khan[1], A. Nairan[2], L. Wenjing[1], M. Irfan[1], K. Javed[3] and *X. Han*[1] *1. Institute of Physics, Beijing, China; 2. University of the Punjab, Lahore, Pakistan; 3. Physics, Forman Christian College, Lahore, Pakistan*

**EQ-04**. **Magnetization Dynamics in Highly Oriented Ferromagnetic Multilayered Nanowires Arrays.** S. Pathak[1], V. Singh[2] and *V. Kaushik*[3] *1. Materials Science and Engineering, Yonsei University, Seoul, The Republic of Korea; 2. Department of Applied Sciences & Humanities, Inderprastha Engineering College, Delhi, India; 3. Mechanical Engineering, Sungkyunkwan University, Suwon, The Republic of Korea*

**EQ-05**. **Electrodeposited Nanowires-A Route towards 3D Magnetic Recording?** B. Trapp[1,2], S. Bochmann[3], S. Da Col[1,2], M. Stano[1,2], *A. Wartelle*[1,2], J. Bachmann[3] and O. Fruchart[4,1] *1. CNRS-Institut Néel, Grenoble, France; 2. Univ. Grenoble Alpes, Institut Néel, Grenoble, France; 3. Friedrich-Alexander-Universität, Nürnberg-Erlangen, Germany; 4. SPINTEC, CNRS, Grenoble, France*

**EQ-06**. **Temperature dependent magnetic properties of Ni nanotubes synthesized by atomic layer deposition.** *A. Pereira*[1,2], J.L. Palma[1,2], J.C. Denardin[1,2] and J. Escrig[1,2] *1. Departamento de Física, Universidad de Santiago Chile, Santiago, Chile; 2. CEDENNA, Universidad de Santiago de Chile, Santiago, Chile*

**EQ-07**. **Switching Behavior of Perpendicular Magnetic Nanodot Arrays Patterned by Block Copolymer Lithography.** *K. Tu*[1], J.C. Kally[2], T. Liu[3], H. Almasi[4], N. Samarth[2], M. Wu[3], W. Wang[4] and C.A. Ross[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA; 2. Pennsylvania State University, University Park, PA; 3. Department of Physics, Colorado State University, Fort Collins, CO; 4. Physics, The University of Arizona, Tucson, AZ*

**EQ-08**. **Magnetic Properties of GaAs-$Fe_3Si$ Core-Shell Nanowires - A Comparison of Ensemble and Single Nanowire Investigation.** M. Hilse[1], B. Jenichen[1] and *J. Herfort*[1] *1. Paul-Drude-Institute, Berlin, Germany*

**EQ-09**. **Electroless Plated Maghemite for Three-dimensional Magneto Photonic Crystals.** *S. Mito*[1], T. Kawaguchi[1], T. Kawashima[1], J. Sasano[2], H. Takagi[2] and M. Inoue[2] *1. National Institute of Technology, Tokyo College, Hachioji, Japan; 2. Toyohashi University of Technology, Toyohashi, Japan*

**EQ-10**. **Study of Magnetization Reversal Process in Metallic Core-Shell Nanowires; M (M=Ni, Fe, Co)-CoO.** *A. Nairan*[1], U. Khan[2] and M. Iqbal[1] *1. University of the Punjab, Lahore, Pakistan; 2. Institute of Physics, Beijing, China*

**EQ-11**. **Withdrawn**

**EQ-12**. **Morphological and magnetic characterization of FeCo nanoparticles synthesized via different chelate compounds of cobalt.** *S. Alikhanzadeh-Arani*[1] *1. University of Kashan, Institute of Nano Science and Nano Technology, Kashan, The Islamic Republic of Iran*

**EQ-13**. **Facile sol-gel auto-combustion synthesis, characterization and magnetic property of $CuFe_{12}O_{19}$ nanostructures.** *M. Salavati-Niasari*[1] and F. Ansari[1] *1. Institute of Nano Science and Nano Technology, University of Kashan, Kashan, The Islamic Republic of Iran*

**EQ-14**. **Self-assembled growth of $Sr(Ti,Fe)O_3$ - $CoFe_2O_4$ magnetic nanocomposite thin films.** *D. Kim*[1], T. Kim[1] and C.A. Ross[2] *1. Myongji University, Gyeonggi-Do, The Republic of Korea; 2. MIT, Cambridge, MA*

**EQ-15**. **Magnetic Reversal Modes in Magnetite Nanotube Arrays Synthesized by Atomic Layer Deposition.** *J.L. Palma*[1,2], A. Pereira[1,2], J.C. Denardin[1,2] and J. Escrig[1,2] *1. Physics, Universidad de Santiago, Santiago, Chile; 2. CEDENNA, Center for the Development of Nanotechnology and Nanoscience, Santiago, Chile*

THURSDAY
MORNING
9:30

GRAND BALLROOM

## Session ER
# PATTERNED FILMS II
# (Poster Session)
Caroline Ross, Chair
MIT, Cambridge, MA

**ER-01**. **Modelling the charge and magnetic x-ray scattering from nanoscale FePd patterned arrays.** *T.P. Hase*[1], D. Greving[1], R. Procter[1], E. Östman[2], U. Arnalds[2], V. Kapaklis[2], L. Bouchenoire[3,4], P. Thompson[3,4], D. Haskel[5], Y. Choi[6] and B. Hjörvarsson[2] *1. Physics, University of Warwick, Coventry, United Kingdom; 2. Physics and Astronomy, Materials Physics, Uppsala, Sweden; 3. Department of Physics, University of Liverpool, Liverpool, United Kingdom; 4. European Synchrotron Radiation Facility, XMaS Beamline, Grenoble, France; 5. Advanced Photon Source, Argonne National Laboratory, Argonne, IL; 6. X-ray Science Division, Argonne National Laboratory, Argonne, IL*

**ER-02**. **Size-dependent magnetic properties of FeGaB/AlOx multilayer micro-islands.** *X. Wang*[1], Y. Gao[2], Z. Wang[1] and N.X. Sun[1] *1. ECE, Northeastern University, Boston, MA; 2. Winchester Technologies LLC, Winchester, MA*

**ER-03**. **Effect of volume fraction on the magnetic properties for FePt/ Fe nano-composites.** *R. Kurosu*[1], A. Sugawara[1,2], H. Iwama[1], M. Doi[1] and T. Shima[1] *1. Faculty of Engineering, Tohoku Gakuin University, Tagajo, Japan; 2. Tohoku Gakuin University, Tagajo, Japan*

**ER-04**. **Interplay Between Magnetic History and Geometrical Configuration in Hexagonal Networks with Weak Perpendicular Magnetic Anisotropy.** F. Valdés-Bango[1,2], *J. Martin*[1,2], M. Velez Fraga[1,2], L. Alvarez-Prado[1,2] and J. Alameda[1,2] *1. Dpto. Fisica, Universidad de Oviedo, Oviedo, Spain; 2. CINN (CSIC-Universidad de Oviedo), El Entrego, Spain*

**ER-05**. **Self-assembled surface nanostructure on CoPd thin film: magnetism and morphology evolution.** W. Lin[1], *C. Hsu*[1], P. Chang[1] and H. Chiu[1] *1. Department of Physics, National Taiwan Normal University, Taipei, Taiwan*

**ER-06**. **Self-biased microwave ferromagnetic performance of patterned $Ni_{80}Fe_{20}$ thin films.** R. Yang[1], X. Liu[1], N.X. Sun[2], H. Lin[2] and *S. Li*[1,3] *1. Qingdao University, Qingdao, China; 2. Northeastern University, Boston, MA; 3. National Laboratory of Solid State Microstructures, Nanjing Unversity, Nanjing, China*

**ER-07**. **Arrays of magnetic nanodots studied by x-ray holographic microscopy and scattering.** *R. Frömter*[1], K. Bagschik[1], J. Wagner[1], S. Freercks[1], C. Thoenissen[1], B. Beyersdorff[1], L. Müller[2], S. Schleitzer[2], M.H. Berntsen[3], G. Grübel[2] and H. Oepen[1] *1. Institut für Nanostruktur- und Festkörperphysik, Universität Hamburg, Hamburg, Germany; 2. FS-CXS, DESY, Hamburg, Germany; 3. KTH Royal Institute of Technology, Kista, Sweden*

**ER-08**. **Interplay between ferromagnetic resonance and surface plasma resonance on Ag/Co nano-dot arrays.** *Y. Chang*[1], K. Lin[1], D. Schmool[2] and J. Wu[3] *1. Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan; 2. Groupe d'Etude de la Matière Condensée GEMaC, CNRS, Université de Versailles/Saint-Quentin, Versailles, France; 3. Physics, National Changhua University of Education, Changhua, Taiwan*

**ER-09**. **Magnetism of electron beam lithographed T-shaped magnetic nanostructures.** E.H. Sinnecker[1], *J. Sinnecker*[2], R.A. Escobar[3], D. Altbir[3] and J. D'Albuquerque e Castro[1] *1. Instituto de Física, UFRJ, Rio de Janeiro, Brazil; 2. Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brazil; 3. Universidad de Santiago de Chile, Santiago, Chile*

**ER-10**. **The enhancement of thermoelectric effect by surface roughness-controlled nanowire.** *C. Li*[1], H. Huang[1], Y. Xu[1], Y. Tsao[1] and Z. Wei[1] *1. Institute of Nanoengineering and Microsystems, National Tsing Hua University, Hsinchu, Taiwan*

**ER-11**. **Magnetic resonance spectra in arrays of dipole coupled nanomagnets.** *I. Nekrashevich*[1] and D. Litvinov[1] *1. Materials Engineering, University of Houston, Houston, TX*

**ER-12**. **Phase-Field Modeling of Ferromagnetic Thin Films with Patterned Surface Features.** *Y. Alvandi-Tabrizi*[1,2], W. Chan[2] and J. Schwartz[2] *1. Mechanical and Aerospace Engineering, North Carolina State University, Raleigh, NC; 2. Materials Science and Engineering, North Carolina State University, Raleigh, NC*

**ER-13**. **Direct growth of perpendicular CoFeB/MgO structure on piezoelectric films for strain control of domain wall motion.** *D. Lam*[1], J. Adam[1], G. Agnus[1], S. Eimer[1], L.H. Diez[1], N. Vernier[1], T. Devolder[1], T. Maroutian[1], P. Auber[1], P. Lecoeur[1] and D. Ravelosona[1] *1. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Univ Paris-Saclay, C2N, Orsay, France*

THURSDAY MORNING 9:30 — GRAND BALLROOM

## Session ES
# SUPERCONDUCTIVITY AND MAGNETIC SEMICONDUCTORS (Poster Session)

Sean Langridge, Chair
Rutherford Appleton Laboratory, Chilton, United Kingdom

**ES-01**. **The first-principles investigations on magnetic ground-state in Sm-doped phenanthrene.** J. Han[1,2], G. Zhong[2,4], X. Wang[2], X. Chen[3] and *H. Lin*[2] *1. Peking University, Beijing, China; 2. Beijing Computational Science Research Center, Beijing, China; 3. Center for High Pressure Science and Technology Advanced Research, Shanghai, China; 4. Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, China*

**ES-02**. **Transport properties of the iron-based superconductor $FeSe_{0.5}Te_{0.5}$.** T. Wang[1] and *Z. Xing*[2] *1. Mathematics, Nanjing University of Aeronautics and Astronautics, Nanjing, China; 2. National Laboratory of Solid State Microstructures, and School of Electronic Science and Engineering, Nanjing University, Nanjing, China*

**ES-03**. **Control of Superconductivity with a Single Ferromagnet in Nb/Er Bilayers.** N. Satchell[1,2], J.D. Witt[2], M.G. Flokstra[3], S. Lee[3], J. Cooper[1], C. Kinane[1], S. Langridge[1] and *G. Burnell*[2] *1. ISIS Neutron and Muon Facility, Didcot, United Kingdom; 2. Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 3. Physics and Astronomy, University of St Andrews, St Andrews, United Kingdom*

**ES-04**. **Vortices Propagating and Hall Effect in Nb Thin Films with Channeled Pinning Potential Landscapes.** L. Horng[1] and *T. Wu*[2] *1. Dep. Physics, National Changhua University of Education, Changhua, Taiwan; 2. Department of Electronic Engineering, National Formosa University, Yunlin, Taiwan*

**ES-05. Superconducting Properties of $Zr_{1+x}Ni_{2-x}Ga$ and $Zr_{1-x}Ni_{2+x}Ga$ Heusler compounds.** *S.A. Alzahrani*[1] and M.U. Khan[1] *1. Physics Department, Miami University-Oxford, Oxford, OH*

**ES-06. Broken time-reversal symmetry probed by muon spin relaxation in the caged type superconductor $Lu_5Rh_6Sn_{18}$.** *A. Bhattacharyya*[1] *1. Department of Physics, RKMVU, Belur Math, Belur, India*

**ES-07. High Temperature Ferromagnetism in (In,Fe)As Grown on Vicinal GaAs Substrates.** *M. Yoshida*[1], A. Nagamine[1], M. Tanaka[2,3] and P. Nam Hai[1,3] *1. Department of Electrical and Electronic Engineering, Tokyo Institute of Technology, Tokyo, Japan; 2. Department of Electrical Engineering and Information Systems, University of Tokyo, Tokyo, Japan; 3. Center for Spintronics Research Network, University of Tokyo, Tokyo, Japan*

**ES-08. Temperature-dependent shape anisotropy in patterned ferromagnetic (Ga,Mn)As films with low Mn concentration.** *X. Li*[1], S. Dong[1], T. Yoo[1], X. Liu[1], J. Furdyna[1] and M. Dobrowolska[1] *1. Department of Physics, University of Notre Dame, Notre Dame, IN*

**ES-09. A First Principles Study of Fe Doped Diamond: Control of Clustering and Ferromagnetic Stabilization by Charge State Manipulation.** *E. Benecha*[1] and E. Lombardi[1] *1. School of Interdisciplinary and Graduate Studies, University of South Africa (UNISA), Pretoria, South Africa*

**ES-10. Magnetic and Electron Spin Resonance studies on $SrSn_{1-x}Fe_xO_{3-\delta}$ (x=0.05 and 0.08) nano-sticks.** K. Radhika[1] and *H. Narayanan*[1] *1. Physics, IIT Madras, Chennai, India*

**ES-11. Probing spin polarization of various concertation of oxygen vacancies Co-doped ZnO via Point-contact Andreev reflection technique.** *K.S. Yang*[1], T. Huang[1], G.D. Dwivedi[1], L. Lin[2], S. Lee[3], S. Sun[4] and H. Chou[5] *1. Department of Physics, National Sun Yat-sen University, Kaohsiung, Taiwan; 2. Physics, Academia Sinica, Taipei, Taiwan; 3. Institute of Physics, Academia Sinica, Taipei, Taiwan; 4. Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan; 5. National Sun Yat-Sen University, Kaohsiung, Taiwan*

**ES-12. Magnetic anisotropy of quaternary GaMnAsP ferromagnetic semiconductor.** H. Lee[1], S. Lee[1], S. Choi[1], S. Bac[1], A. Nasir[1], *S. Lee*[1], A. Pardo[2], V. Kanzyuba[3,4], S. Dong[3], X. Li[3], S. Rouvimov[4,5], X. Liu[3], J. Furdyna[3] and M. Dobrowolska[3] *1. Physics, Korea University, Seoul, The Republic of Korea; 2. Physics, Universidad del Atlantico, Barranquilla, Colombia; 3. Department of Physics, University of Notre Dame, Notre Dame, IN; 4. Electrical Engineering, University of Notre Dame, Notre Dame, IN; 5. Integrated Imaging Facility, University of Notre Dame, Notre Dame, IN*

**ES-13. Magnetic Properties of Mn Doped Self Assembled Zinc Silicate Nanowires.** T. Khan[1], W. Mehmood[3], M. Rafique[3], A. Hamayun[3] and *S. Manzoor*[3] *1. Institut für Experimentalphysik, Arnimallee 14, Freie Universität Berlin, Berlin, Germany; 3. Physics, COMSATS Institute of Information Technology, Islamabad, Pakistan*

**ES-14**. **Direct Evidence of Co 3d Impurity Band in Room-Temperature Ferromagnetism of Diluted Magnetism Semiconductors Co Doped ZnO by Hard X-ray Photoelectron Spectroscopy.** *P. Chuang*[1] *1. Physics, National Cheng Kung University, Tainan, Taiwan*

**ES-15**. **Theoretical and experimental study of nanostructures of ZnO doped with nickel (II) and chromium (III).** N. dos S. Castro[1], P. Borges[2], *L. Scolfaro*[3] and R.C. de Lima[1] *1. Univarsidade Federal de Uberlandia, Uberlandia, Brazil; 2. Universidade Federal de Vicosa, Rio Paranaiba, Brazil; 3. Texas State University, San Marcos, TX*

THURSDAY MORNING 9:30 GRAND BALLROOM

## Session ET
# DOMAIN WALL, VORTEX AND SKYRMION DYNAMICS III (Poster Session)

Hendrik Ohldag, Co-Chair
SLAC National Accelerator Laboratory, Menlo Park, CA
Elena Bankowski, Co-Chair
U.S. Army TARDEC, Warren, MI

**ET-01**. **Current-driven skyrmion motion along disordered magnetic tracks.** V. Raposo[1], R. Luis-Martinez[1] and *E. Martinez*[1] *1. Applied Physics, University of Salamanca, Salamanca, Spain*

**ET-02**. **Electrical detection of single magnetic skyrmion at room temperature.** R. Tomasello[1], *M. Ricci*[1], P. Burrascano[1], V. Puliafito[2], M. Carpentieri[3] and G. Finocchio[4] *1. Department of Engineering, Polo Scientifico Didattico di Terni, University of Perugia, Terni, Italy; 2. Department of Engineering, University of Messina, Messina, Italy; 3. Department of Electrical and Information Engineering, Politecnico di Bari, Bari, Italy; 4. Department of Mathematical and Computer Sciences, University of Messina, Messina, Italy*

**ET-03**. **Study of Domain Wall Switching Behavior in Permalloy Thin Film Rings.** *K. Lai*[1], L. Chan[1], D. Shiu[1], J. Wu[1] and L. Horng[1] *1. Dep. Physics, National Changhua University of Education, Changhua, Taiwan*

**ET-04**. **Investigation of Exchange Bias Mediated Domain-wall Dynamics in a IrMn/CoFeB Multilayered & Crossed Magnetic Nanowire Device by Magneto-optical Kerr Effect Microscopy.** Y. Hong[1], *D. Shiu*[1], C. Lin[1], K. Lai[1], J. Wu[1] and L. Horng[1] *1. National Changhua University of Education, Changhua, Taiwan*

**ET-05**. **Effect of Gilbert damping constant on domain wall pinning in permanent magnets: effect of the damping constant at grain boundary.** *K. Yamada*[1] and Y. Nakatani[2] *1. Department of Chemistry and Biomolecular Science, Gifu University, Gifu, Japan; 2. University of Electro-communications, Tokyo, Japan*

**ET-06**. **Analytical study of field-driven bubble expansion in PMA materials under the application of in-plane fields.** *S. Nasseri*[1,3] and G. Durin[2,1] *1. ISI Foundation, Torino, Italy; 2. Nanoscience and Material, Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 3. Politecnico di Torino, Torino, Italy*

**ET-07**. **Magnetization reversal of spiral rhaped nanowires via domain wall motion.** R. Schumm[1], N. Greenberg[1] and *A. Kunz*[1] *1. Physics, Marquette University, Milwaukee, WI*

**ET-08**. **Significant Enhancement of Domain Wall Speed in Ferromagnetic Pt/Co/Ti Film.** *M. Park*[1], D. Kim[1], Y. Park[1,2], B. Min[2] and S. Choe[1] *1. Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea; 2. Center for Spintronics, Korea Institute of Science and Technology (KIST), Seoul, The Republic of Korea*

**ET-09**. **Control of the Magnetic Ground State of Thick Stadium-shaped Ferromagnetic Elements.** *S. Lendinez*[1,2], J. Ding[1], P.N. Lapa[1,3], N. Domingo[4], J. Hernàndez[2] and V. Novosad[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL; 2. Física de la Matèria Condensada, Universitat de Barcelona, Barcelona, Spain; 3. Texas A&M University, College Station, TX; 4. Centre for Nanoscience and Nanotechnology, Bellaterra, Spain*

**ET-10**. **Magnetic nano-transistor.** A. Espejo[1], *N.S. Vidal*[1], J. Lopez[2], D. Gorlitz[3], K. Nielsch[3] and J. Escrig[4] *1. Universidad de Santiago de Chile, Santiago, Chile; 2. Universidad Técnica Federico Santa María, Valparaíso, Chile; 3. University of Hamburg, Hamburg, Germany; 4. Departamento de Física, Universidad de Santiago Chile, Santiago, Chile*

**ET-11**. **Influence of Structural Inversion Asymmetry on Current-induced Domain Wall Motion in Bilayer Nanowires with Ferro- and Antiferromagnetic Coupling.** *T. Komine*[1] and T. Aono[1] *1. Faculty of Engineering, Ibaraki University, Ibaraki, Japan*

**ET-12**. **Microwave Assisted Nucleation Of Magnetic Skyrmions.** *Y. Huang*[1,3], J. Xia[2], X. Zhang[2], W. Kang[1,3], W. Zhao[1,3] and Y. Zhou[2] *1. Fert Beijing Research Institute, Beihang University, Beijing, China; 2. Department of Physics, The University of Hong Kong, Hong Kong, Hong Kong; 3. Beijing Advanced Innovation Center for Big Data and Brain Computing (BDBC), Beihang University, Beijing, China*

**ET-13**. **Magnetic domain wall dynamics in constricted nanowire.** M. Al Bahri[1] and *R. Sbiaa*[1] *1. Physics Department, Sultan Qaboos University, Muscat, Oman*

**ET-14**. **Velocity enhancement for current-induced skyrmion drift in a finite channel.** *J.C. Martinez*[1], W. Gan[2], C. Ho[1], Z. Siu[1], W. Lew[2] and M.B. Jalil[3] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore; 2. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 3. Information Storage Materials Laboratory, Electrical and Computer Engineering Department, National University of Singapore, Singapore, Singapore*

**ET-15**. **Use of in-plane anisotropy to control energy transfer time in a pair of coupled magnetic vortex nanodisks.** *H. Vigo Cotrina*[1] and A. Passos Guimarães[1] *1. Centro Brasileiro de Pesquisas Fisicas (CBPF), Río de Janeiro, Brazil*

THURSDAY MORNING 9:30 | GRAND BALLROOM

## Session EU
# MRAM AND MAGNETIC LOGIC DEVICES III (Poster Session)

Byong-Guk Park, Chair
Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea

**EU-01**. **Micromagnetic analysis of geometrically controlled current-driven magnetization switching.** O. Alejos[1], V. Raposo[2], M. Hernandez[2], L. Sanchez-Tejerina[1], S. Moretti[2] and *E. Martinez*[2] *1. Electricidad y Electrónica, Universidad de Valladolid, Valladolid, Spain; 2. Applied Physics, University of Salamanca, Salamanca, Spain*

**EU-02**. **Voltage-Controlled Asymetrical All Spin Logic Device.** Z. Zhang[1], *Y. Zhang*[1], L. Su[1], Y. Zhang[1] and W. Zhao[1] *1. Fert Beijing Institute, Beihang University, Beijing, China*

**EU-03**. **Novel Magnetic Wire Fabrication Process by way of Nanoimprint Lithography for Current Induced Magnetization Switching.** *T. Asari*[1], A. Hiroyuki[1] and R. Shibata[1] *1. Information Storage Materials Laboratory, Toyota Technological Institute, Nagoya, Japan*

**EU-04**. **Domain-wall mediated thermal switching of in-plane STT-MRAM cell.** A. Belanovsky[1], N. Dmitriev[1], M. Kuteifan[2], V. Lomakin[2] and *A.V. Khvalkovskiy*[3,1] *1. Moscow Institute of Physics and Technology (State University), Moscow, Russian Federation; 2. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA; 3. Crocus Nano Electronics, Moscow, Russian Federation*

**EU-05**. **Increased boron content in perpendicular CoFeB/MgO-based MTJs for wider process tolerance.** *J.P. Pellegren*[1], M. Furuta[2], V. Sundar[2], J. Zhu[2,3] and V.M. Sokalski[1] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA; 2. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA; 3. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA*

**EU-06**. **Magnetization Switching for Perpendicular Magnetic Tunnel Junctions Driven by Spin Torque from the Spin Hall Effect.** C. Lee[1], *T. Wu*[1] and J. Wu[2] *1. National Yunlin Univ. of Science and Technology, Douliou, Taiwan; 2. Physics, National Changhua University of Education, Changhua, Taiwan*

**EU-07**. **Design of changeable logic device using hybrid magnetic tunnel junctions with normal and inverse magnetoresistive effect.** *S. Isogami*[1] *1. Fukushima National College of Technology, Iwaki, Japan*

**EU-08**. **Transmission of Information along a Nanomagnetic Logic Path Clocked by Current.** *V. Puliafito*[1], A. Giordano[2], B. Azzerboni[1] and G. Finocchio[2] *1. Department of Engineering, University of Messina, Messina, Italy; 2. Department of Mathematical and Computer Sciences, Physical Sciences and Earth Sciences, University of Messina, Messina, Italy*

**EU-09**. **Controlled Data Storage for Emerging Non-Volatile Memory Based on Nano Magnetic Logic.** *F. Riente*[1], G. Ziemys[1], C. Mattersdorfer[1], S. Boche[1], G. Turvani[1] and S. Breitkreutz-v. Gamm[1] *1. Institute for Technical Electronics, Technische Universität München, Munich, Germany*

**EU-10**. **Withdrawn**

**EU-11**. **Properties of easy-plane/perpendicular magnetic anisotropy bilayers with varied interlayer exchange coupling.** L. Fallarino[1], *V. Sluka*[2], B. Kardasz[3], M. Pinarbasi[3], A. Berger[1] and A.D. Kent[2] *1. CIC nanoGUNE, San Sebastian - Donostia, Spain; 2. Department of Physics, New York University, New York, NY; 3. Spin-Transfer Technologies Inc., Freemont, CA*

**EU-12**. **A Self-Terminated One-Phase Write Driver for Complementary-MTJ Based Memory Cells.** *D. Suzuki*[1] and T. Hanyu[1] *1. Tohoku University, Sendai, Japan*

**EU-13**. **Energy-efficient Spin-polarized Multilevel Information Processing.** *J. Hong*[1], A. Hadjikhani[2], M. Stone[2], Y. Lee[1], J. Bokor[1] and S. Khizroev[2] *1. EECS Department, University of California, Berkeley, CA; 2. Florida International University, Miami, FL*

**EU-14**. **Time-resolved magneto-optical Kerr effect study of the $Co_{40}Fe_{40}B_{20}$ films with a perpendicular magnetic anisotropy.** *D. Huang*[1], X. Ruan[1], J. Cai[2], J. Wu[3], B. Liu[1], L. He[1], M. Gao[1], H. Tu[1], J. Du[1], K. Wang[1] and Y. Xu[1] *1. Nanjing University, Nanjing, China; 2. Chinese Academy of Sciences, Beijing, China; 3. The University of York, York, United Kingdom*

**EU-15**. **Perpendicular Magnetic Anisotropy of CoFeB/Ta Bilayers on ALD $HfO_2$.** *B.F. Vermeulen*[1,2], J. Swerts[2], S. Couet[2], I.P. Radu[2], C. Detavernier[3], J. Jochum[1], M. Van Bael[1], K. Temst[1], G. Groeseneken[4], N. Shukla[5], S. Miwa[5], Y. Suzuki[5] and K.M. Martens[2] *1. Department of Physics and Astronomy, KU Leuven, Leuven, Belgium; 2. Imec, Leuven, Belgium; 3. Department of Physics, University of Ghent, Ghent, Belgium; 4. Department of Electrical Engineering, KU Leuven, Leuven, Belgium; 5. Graduate School of Engineering Science, Osaka University, Osaka, Japan*

## Session EV
# POWER MACHINES I (Poster Session)

Vitaliy Lomakin, Chair
University of California, San Diego, La Jolla, CA

**EV-01**. **Design and Analysis of Novel PM Motor with Hybrid PM Excitation and Asymmetric Rotor Structure.** *G. Liu*[1,2], G. Xu[1,2], W. Zhao[1,2], Q. Chen[2] and X. Du[1,2] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; 2. Jiangsu Key Laboratory of Drive and Intelligent Control for Electric Vehicle, Zhenjiang, China*

**EV-02**. **Characteristic Analysis and Design of a Novel Ironless Halbach-magnetized Permanent Magnet Linear Synchronous Motor.** *L. Zhang*[1], B. Kou[1] and Y. Jin[2] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China; 2. Harbin Institute of Technology, Harbin, China*

**EV-03**. **Design and Analysis of Reluctance Synchronous Machines With Asymmetric Salient Pole.** *Q. Chen*[1,2], G. Liu[1,2], W. Zhao[1,2], G. Xu[1,2] and X. Du[1,2] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China; 2. Jiangsu Key Laboratory of Drive and Intelligent Control for Electric Vehicle, Zhenjiang, China*

**EV-04**. **A Consequent Pole Transverse-Flux PM Linear Machine for Direct-Drive Systems.** *S. Zhu*[1] and P. Zheng[1] *1. Electrical Engineering, Harbin Institute of Technology, Harbin, China*

**EV-05**. **A Novel Linear Permanent-Magnet Vernier Motor for Long Stroke Applications.** *S. Wang*[1,2], W. Zhao[1,2] and J. Ji[1,2] *1. Jiangsu University, Zhenjiang, China; 2. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**EV-06**. **A Real-Time Model of a Maglev Planar Motor Based on Composite Numerical Integration.** B. Kou[1], *X. Feng*[1], L. Zhang[1] and Y. Zhou[2,1] *1. Harbin Institute of Technology, HarBin, China; 2. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

**EV-07**. **Relationship Between Iron Loss and Pole-Pair Number in Flux-Switching Permanent-Magnet Machines.** *J. Luo*[1], J. Ji[1], W. Zhao[1] and J. Zheng[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**EV-08**. **Magnetic Pole Shape Design for Reduction of Thrust Ripple of Slotless Permanent Magnet Linear Synchronous Motor with Arc-shaped Magnets considering End-effect based on Analytical Method.** *H. Park*[1], K. Shin[1], K. Kim[1], S. Jang[1] and J. Choi[1] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

**EV-09**. **Field Analysis of a Novel Permanent Magnet Linear Synchronous Motor with Ring-Structure Winding.** *L. Zhang*[1] and B. Kou[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China*

**EV-10**. **Eddy Current Loss Analysis and Axial Segmentation of Open-Slot Fault-Tolerant Permanent-Magnet Motors.** *J. Luo*[1], J. Ji[1], W. Zhao[1] and Q. Lei[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**EV-11**. **A Study for Flux-Variable Memory Motor Depending on the Position of the Permanent Magnets.** *S. Kim*[1] *1. KETI, Gwangju, The Republic of Korea*

**EV-12**. **Thermal Analysis and Experimental Verification for a Staggered-Teeth Transverse-Flux Permanent-Magnet Linear Machine.** P. Zheng[1], *S. Zhang*[1], B. Yu[1], J. Liu[1] and Z. Yin[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

**EV-13**. **A Double-winding Bearingless Flux-switching Permanent Magnet Machine.** Y. Sun[1], H. Wu[1] and *Y. Du*[1] *1. Jiangsu University, Zhenjiang, China*

**EV-14**. **Research on a Novel Axial-Flux Magnetic-Field-Modulated Brushless Double-Rotor Machine with Low Axial Force and High Efficiency.** C. Tong[1], *Z. Song*[1] and P. Zheng[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China*

**EV-15**. **Characteristic Analysis of a Novel Hybrid Permanent Magnet Assisted Synchronous Reluctance Motor for EVs Application.** *W. Wu*[1], X. Zhu[1], Z. Xiang[1] and Q. Lu[1] *1. School of electrical and information engineering, Jiangsu University, Zhen Jiang, China*

THURSDAY MORNING 9:30 — GRAND BALLROOM

### Session EW
## POWER AND CONTROL MAGNETICS III (Poster Session)

Ichiro Sasada, Chair
Kyushu University, Kasuga, Japan

**EW-01**. **Torque Ripple Minimization of Interior Permanent Magnet Machines Using Harmonic Injection.** *G. Liu*[1], Y. Zeng[1] and W. Zhao[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**EW-02**. **A Novel Axial Flux Stator and Rotor Dual Permanent Magnet Machine.** *Y. Wang*[1], S. Niu[1] and W. Fu[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, China*

**EW-03**. **A High Power Factor Permanent-Magnet Fault-Tolerant Vernier Machine.** *W. Zhao*[1], X. Zhu[1], J. Ji[1], J. Zhu[1] and J. Liu[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**EW-04**. **Characteristic Analysis and Experimental Verification of the Generating Performance of Permanent Magnet Linear Synchronous Machine based on a Three-Dimensional Analytical Method.** *M. Koo*[1], J. Choi[1], J. Jeong[1] and J. Kim[1] *1. Chungnam National University, Daejeon, The Republic of Korea*

**EW-05**. **Performance Comparison of an Outer-Rotor-Permanent-Magnet Flux-Switching Machine and an Outer-Rotor Surface-Mounted Permanent Magnet Machine.** *H. Zhang*[1] and H. Wei[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**EW-06**. **A New Dual Stator Linear Permanent-Magnet Vernier Machine with Reduced Copper Loss.** *F.F. Bian*[1], W. Zhao[1] and J. Ji[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**EW-07**. **Back-EMF Waveform Optimization of Flux-Reversal Permanent Magnet Machines.** *X. Zhu*[1] and H. Wei[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**EW-08**. **Eddy Current Loss in Double-sided Cored Slotless Type Permanent Magnet Linear Synchronous Generator Using Analytical Method.** *G. Jang*[1], M. Koo[1], S. Seo[1] and J. Choi[1] *1. Electrical Engineering, Chung Nam National University, Daejoen, The Republic of Korea*

**EW-09**. **Effective method to reduce the stray voltage of the crane hook used to handle a heavy solid-fuel rocket.** *A. Ueda*[1], K. Tajima[1], T. Nishida[1], M. Muto[1], I. Sasada[2] and J. Oshino[2] *1. Japan Aerospace Exploration Agency (JAXA), Sengen, Japan; 2. Applied Science for Electronics and Materials, Kyushu University, Kasuga, Japan*

**EW-10**. **Mathematical Model of Half-Magnet Type Bearingless Flux-Switching Permanent Magnet Motor.** *C. Zhao*[1] and H. Zhu[1] *1. Jiangsu University, Zhenjiang, China*

**EW-11**. **A comparison between one-way and two-way coupled analyses of electromagnetic machines considering magnetic and structural interactions.** *J. Nam*[1], C. Kang[1], J. Song[1] and G. Jang[1] *1. Dept of Mechanical Convergence Engineering, Hanyang University, Seoul, The Republic of Korea*

**EW-12**. **Comparative Analysis and Optimization of Dynamic Charging Coils for Roadway-Powered Electric Vehicles.** B. Jia[1] and *Z. Zhang*[1] *1. School of Electrical Engineering and Automation, Tianjin University, Tianjin, China*

**EW-13**. **Modeling and Analysis of a New HTS Electromagnetic Screw for Artificial Heart.** *Z. Ling*[1], W. Zhao[1] and J. Ji[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**EW-14**. **Quantitative Comparison of Embedded and Surface-mounted Magnetic Screws.** *Z. Ling*[1], W. Zhao[1] and J. Ji[1] *1. School of Electrical and Information Engineering, Jiangsu University, Zhenjiang, China*

**EW-15**. **Performance Evaluation of a Tubular Flux-modulated PM Linear Generator with Sandwiched Armature.** *M. Ma*[1] *1. School of Electrical Engineering and Automation, Hefei University of Technology, Hefei, China*

THURSDAY AFTERNOON 1:30 — MARDI GRAS A-E

## Session FA
# SYMPOSIUM: SPINTRONICS WITH SUPERCONDUCTIVITY
Hans Nembach, Chair
NIST, Boulder, CO

**1:30**

**FA-01**. **Quasiparticle-Mediated Spin Hall Effect in a Superconductor.** ***(Invited)*** *Y. Otani*[1,2] *1. ISSP, University of Tokyo, Kashiwa, Japan; 2. CEMS, RIKEN, Wako, Japan*

**2:06**

**FA-02**. **Superconducting Spin Switch with Internal Exchange Fields and Spin Polarized Current.** ***(Invited)*** *J. Moodera*[1,2] *1. Physics, MIT, Cambridge, MA; 2. Francis Bitter Magnet Lab and Plasma Science and Fusion Center, MIT, Cambridge, MA*

**2:42**

**FA-03**. **Cryogenic Orthogonal Spin-Transfer Memory Elements for Superconducting Electronics.** ***(Invited)*** *V. Sluka*[1], L. Rehm[1], D. Yohannes[2], J. Vivalda[2], R. Hunt[2], D. Amparo[2], I. Vernik[2], O. Mukhanov[2], G. Rowlands[3], C.A. Ryan[3], T.A. Ohki[3] and A.D. Kent[1] *1. Department of Physics, New York University, New York, NY; 2. HYPRES Inc., Elmsford, NY; 3. Raytheon BBN Technologies, Cambridge, MA*

**3:18**

**FA-04**. **Hybrid Spintronic-Superconducting Memory for Exaflop Computing.** ***(Invited)*** *M. Schneider*[1], B. Baek[2], W. Rippard[1], M. Pufall[1] and S.E. Russek[1] *1. National Institute of Standards and Technology, Boulder, CO; 2. Electromagnetics Div., National Institute of Standards and Technology, Boulder, CO*

**3:54**

**FA-05**. **Cryogenic Operation of Three-Terminal Spin-Hall Effect Memory Elements.** ***(Invited)*** *G. Rowlands*[1], M. Nguyen[2,1], S.V. Aradhya[2], C.A. Ryan[1], D. Ralph[2], R. Buhrman[2] and T.A. Ohki[1] *1. Quantum Information Processing, BBN Technologies, Cambridge, MA; 2. Cornell University, Ithaca, NY*

## Session FB
# SPIN CURRENT AND RELATED EFFECTS II

Shinji Yuasa, Chair
National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

**1:30**

**FB-01**. **Exchange-dominated pure spin current transport in $Alq_3$ molecules.** ***(Invited)*** *D. Wu*[1] *1. Nanjing University, Nanjing, China*

**2:06**

**FB-02**. **Interfacial spin–orbit coupling between two dimensional materials and Thulium Iron Garnet.** *S. Redjai Sani*[1], A. Nourbakhsh[2], A. Devarakonda[3], A. Zubair[2], S.A. Siddiqui[2], A. Quindeau[1], M. Baldo[2], M. Dresselhaus[2,3], T. Palacios[2], J. Checkelsky[3] and C.A. Ross[1] *1. Material Science and Engineering, MIT - Massachusetts Institute of Technology, Cambridge, MA; 2. Electrical Engineering and Computer Science, MIT - Massachusetts Institute of Technology Massachusetts Institute of Technology, Cambridge, MA; 3. Physics, MIT - Massachusetts Institute of Technology, Cambridge, MA*

**2:18**

**FB-03**. **Investigation of spin to charge conversion at Bi/Ag interface on yttrium iron garnet.** *M. Matsushima*[1], S. Dushenko[1], R. Ohshima[1], Y. Ando[1], T. Shinjo[1] and M. Shiraishi[1] *1. Kyoto Univ., Kyoto, Japan*

**2:30**

**FB-04**. **Driving a Pure Spin Current with Dynamic-Nuclear-Polarization Gradients.** *N. Harmon*[1] and M.E. Flatte[1] *1. Physics, University of Iowa, Iowa City, IA*

**2:42**

**FB-05**. **Modulation of the spin currents in graphene by magnetic proximity effect of a ferromagnetic insulating material.** *S. Singh*[1], J. Katoch[1], T. Zhu[1], N. Harmon[2], M. Meng[1], J. Brangham[1], F. Yang[1], M.E. Flatte[2] and R. Kawakami[1] *1. Department of Physics, The Ohio State University, Columbus, OH; 2. Physics, Univ Iowa, Iowa City, IA*

**2:54**

**FB-06**. **Atomic hydrogen induced resonant scattering and magnetic moments in bilayer graphene.** *J. Katoch*[1], T. Zhu[1], D. Kochan[2], S. Singh[1], J. Fabian[2] and R. Kawakami[1] *1. Department of Physics, The Ohio State University, Columbus, OH; 2. University of Regensburg, Institute for Theoretical Physics, Regensburg, Germany*

3:06

**FB-07**. **Gate-Tunable Spin-Charge Conversion and a Role of Spin-Orbit Interaction in Graphene.** ***(Invited)*** *S. Dushenko*[1], H. Ago[2], K. Kawahara[2], T. Tsuda[3], S. Kuwabata[3], T. Takenobu[4], T. Shinjo[1], Y. Ando[1] and M. Shiraishi[1] *1. Kyoto University, Kyoto, Japan; 2. Kyushu University, Kasuga, Japan; 3. Osaka University, Suita, Japan; 4. Nagoya University, Nagoya, Japan*

3:42

**FB-08**. **Spin accumulation and transport signals in CoFe/MgO/Si devices with confined structure of $n^+$-Si layer.** *Y. Saito*[1], T. Inokuchi[1], M. Ishikawa[1], T. Ajay[1] and H. Sugiyama[1] *1. Corporate R&D Center, Toshiba Corporation, Kawasaki, Japan*

3:54

**FB-09**. **Hole Spin Transport in Epitaxial *p*-Ge(111) Layers.** *M. Kawano*[1], K. Santo[1], M. Ikawa[1], S. Sakai[1], S. Yamada[1], T. Kanashima[1] and K. Hamaya[1] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan*

4:06

**FB-10**. **Electrical Gate Control of Spin/Valley Lifetime in Monolayer $WS_2$.** *Y. Luo*[1], M. Newburger[1], E.J. Bushong[1], K.M. McCreary[2], S. Fullerton-Shirey[3], B. Jonker[4] and R. Kawakami[1] *1. Physics, The Ohio State University, Columbus, OH; 2. Naval Research Laboratory, Washington, DC; 3. Department of Chemical and Petroleum Engineering, University of Pittsburgh, Pittsburgh, PA; 4. Naval Research Laboratory/SSD, Washington, DC*

4:18

**FB-11**. **Anomalous Tunnel Hall Effect from advanced k.p approach.** *H.T. Dang*[1], H. Jaffrès[2], B. Abid[3], M. Benzaouia[3], E. Erina[3], T. Nguyen[4] and H. Drouhin[5] *1. Laboratoire des Solides Irradies, Ecole Polytechnique, Palaiseau, France; 2. CNRS-Thales, Palaiseau, France; 3. Physics Department, Ecole Polytechnique, Palaiseau, France; 4. Institute of Physics, Vietnam Academy of Science and Technology, Hanoi, Vietnam; 5. Laboratoire des Solides Irradies, Ecole Polytechnique, Palaiseau, France*

## Session FC
# ANTIFERROMAGNETIC SPINTRONICS

Aurelien Manchon, Chair
King Abdullah University of Science and Technology, Thuwal, Saudi Arabia

**1:30**

**FC-01**. **Anomalous Hall effect in non-collinear antiferromagnets.** *A.K. Nayak*[1,2], J. Fischer[1], Y. Sun[1], B. Yan[1], C. Felser[1] and S.S. Parkin[2] *1. Max Planck Institute for Chemical Physics of Solids, Dresden, Germany; 2. Max Planck Institute for Microstructure Physics, Halle (Saale), Germany*

**1:42**

**FC-02**. **Spin-orbit Torques with Antiferromagnetic Topological Insulators.** *S. Ghosh*[1] and A. Manchon[1] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

**1:54**

**FC-03**. **Spin diffusion and Hall effect in Antiferromagnets.** *A. Manchon*[1] and H.B. Saidaoui[1] *1. Physical Sciences and Engineering, King Abdullah University of Science and Technology, Jeddah, Saudi Arabia*

**2:06**

**FC-04**. **Narrow-band THz electric-field emission from $Mn_{3-x}Ga$ Heusler alloys.** N. Awari[1,2], S. Kovalev[2], *C. Fowley*[3], K. Rode[4], R. Gallardo[5], Y. Lau[4], D. Betto[4], N. Thiyagarajah[4], B. Green[2], O. Yildirim[3], J. Lindner[3], J. Fassbender[3], M. Coey[4], A.M. Deac[3] and M. Gensch[2] *1. University of Groningen, Groningen, Netherlands; 2. Institute for Radiation Physics, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 4. CRANN, AMBER and School of Physics, Trinity College Dublin, Dublin, Ireland; 5. Departamento de Física, Universidad Técnica Federico Santa María, Valparíso, Chile*

**2:18**

**FC-05**. **Self-sustained Oscillations of a Biaxial Antiferromagnet Under a Spin-transfer Torque.** I. Lisenkov[1,2], R. Khymyn[1], V. Tyberkevych[1] and *A.N. Slavin*[1] *1. Department of Physics, Oakland University, Auburn Hills, MI; 2. Institute of Radioengineering and Electronics of RAS, Moscow, Russian Federation*

**2:30**

**FC-06. Designing a Tunable Non-collinear Antiferromagnetic Resistive Memory in an Oxide Superlattice.** J. Hoffman[1,2], S.M. Wu[1], B.J. Kirby[3] and *A. Bhattacharya*[1,4] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Physics, Harvard University, Boston, MA; 3. NCNR, National Institute of Standards and Technology, Gaithersburg, MD; 4. Center for Nanoscale Materials, Argonne National Laboratory, Argonne, IL*

**2:42**

**FC-07. Spin Transport through Antiferromagnetic NiO and Magnetoresistance in YIG/NiO/Pt Structures.** *Y. Hung*[1], C. Hahn[1], H. Chang[2], M. Wu[2], H. Ohldag[3] and A.D. Kent[1] *1. Department of Physics, New York University, New York City, NY; 2. Department of Physics, Colorado State University, Fort Collins, CO; 3. SLAC National Accelerator Laboratory, Menlo Park, CA*

**2:54**

**FC-08. Antiferromagnetic Spin Current Rectifier.** *R. Khymyn*[1], V. Tyberkevych[1] and A.N. Slavin[1] *1. Department of Physics, Oakland University, Rochester, MI*

**3:06**

**FC-09. Effect of Interfacial Magnetic Moments on Spin Hall Magnetoresistance and Anisotropic Magnetoresistance in Antiferromagnetic Insulator/Normal Metal Heterostructures.** *L. Lang*[1], L. Ma[1], Z. Shi[1], X. Qiu[1] and S. Zhou[1] *1. School of Physics Science and Engineering, Tongji university, ShangHai, China*

**3:18**

**FC-10. Electric-field-induced antiferromagnetic resonance in antiferromagnetic insulators with spin-orbit coupling.** *T. Chiba*[1] and A. Sekine[1,2] *1. Institute for Materials Research (IMR), Tohoku University, Sendai, Japan; 2. Department of Physics, University of Texas at Austin, Austin, TX*

**3:30**

**FC-11. Giant Current-Induced Switching Efficiency in Ferrimagnets near Compensation Point.** *R. Mishra*[1], X. Qiu[1] and H. Yang[1] *1. Department of Electrical and Computer Engineering, National University of Singapore, Singapore, Singapore*

**3:42**

**FC-12. Spin Orbit Torque Efficiency in Compensated Ferrimagnetic Cobalt-Terbium Alloys.** *J.T. Finley*[1] and L. Liu[1] *1. EECS, MIT, Cambridge, MA*

3:54

**FC-13**. **Antiferromagnetic Domain Wall Motion Driven by Spin-Orbit Torques.** T. Shiino[1], S. Oh[2], P.M. Haney[3], *S. Lee*[2], G. Go[2], B. Park[1] and K. Lee[2] *1. Korea Advanced Institute of Science and Technology (KAIST), Daejeon, The Republic of Korea; 2. Korea University, Seoul, The Republic of Korea; 3. National Institute of Standards and Technology, Gaithersburg, MD*

4:06

**FC-14**. **High-throughput screening for antiferromagnetic Heusler compounds using density functional theory.** *J. Balluff*[1], M. Meinert[1] and G. Reiss[1] *1. Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany*

4:18

**FC-15**. **Magnon-mediated spin currents and torques in chiral magnets.** *A. Kovalev*[1] and V. Zyuzin[1] *1. Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE*

THURSDAY AFTERNOON 1:30 — LA GALERIES 3

## Session FD

# SINGLE-PHASE MULTIFERROIC AND MAGNETOELECTRIC MATERIALS

Sara Majetich, Chair

Carnegie Mellon University, Pittsburgh, PA

1:30

**FD-01**. **Understanding the multiferroic behavior of $LuFeO_3$ and related materials.** ***(Invited)*** *S.M. Disseler*[1] *1. NIST Center for Neutron Research, Gaithersburg, MD*

2:06

**FD-02**. **Strain driven E-type commensurability in o-$TbMnO_3$ thin films under ambient pressure.** *S. Mukherjee*[1], K. Shimamoto[2], J.S. White[1], L. Chapon[3], M. Kenzelmann[4], C.W. Schneider[2] and C. Niedermayer[1] *1. Laboratory for Neutron Scattering and Imaging, Paul Scherrer Institut, Villigen, Switzerland; 2. Energy and Environment Research Department, Paul Scherrer Institut, Villigen, Switzerland; 3. Institut Laue Langevin, Grenoble, France; 4. Laboratory for Scientic Development and Novel Materials, Paul Scherrer Institut, Villigen, Switzerland*

2:18

**FD-03**. **Evidence of Face-Centered-Tetragonal Distortion as the Origin of the Ferromagnetic Ground State in γ-Fe Nanoparticles Embedded in $SrTiO_3$.** *V. Augustyns*[1], H. Gunnlaugsson[2,1], K. Van Stiphout[1], T. Lima[1], M. Van Bael[1], K. Temst[1], A. Vantomme[1] and L. Pereira[1] *1. KU Leuven, Instituut voor Kern- en Stralingsfysica, Heverlee, Belgium; 2. Cern, PH Div, Geneve, Switzerland*

**2:30**

**FD-04**. **Electronic and magnetic properties of boundaries in magnetoelectric $Cr_2O_3$ thin films from STEM EELS and first principles calculations.** *C. Sun*[1], Z. Song[1], A. Rath[1], M. Street[2], W. Echtenkamp[2], C. Binek[2] and P. Voyles[1] *1. Department of Materials Science and Engineering, University of Wisconsin-Madison, Madison, WI; 2. Department of Physics and Astronomy, University of Nebraska, Lincoln, NE*

**2:42**

**FD-05**. **Control of Magnetoelectric Switching Energy in $Cr_2O_3$ Films.** M. Al-Mahdawi[1], Y. Shiokawa[1], S. Pati[1], S. Ye[1], *T. Nozaki*[1] and M. Sahashi[1,2] *1. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 2. ImPACT Program, Japan Science and Technology Agency, Tokyo, Japan*

**2:54**

**FD-06**. **Theory Of Phase Transitions In Triangular-lattice Multiferroic $MnI_2$.** *O.I. Utesov*[1] and A.V. Syromyatnikov[1,2] *1. Theory Division, Petersburg Nuclear Physics Institute NRC "Kurchatov Institute", St. Petersburg, Russian Federation; 2. Department of Physics, Saint Petersburg State University, St. Petersburg, Russian Federation*

**3:06**

**FD-07**. **A comparative study of ultra-low-temperature thermal conductivity of multiferroic orthoferrites $RFeO_3$ ($R$ = Gd and Dy).** J. Zhao[1], Z. Zhao[1], J. Wu[1], H. Xu[1], X. Liu[1], X. Zhao[2] and *X. Sun*[1] *1. Hefei National Laboratory for Physical Sciences at Microscale, University of Science and Technology of China, Hefei, China; 2. School of Physical Sciences, University of Science and Technology of China, Hefei, China*

**3:18**

**FD-08**. **Magnetic, dielectric and magneto-dielectric properties of $Li_3NiRuO_5$.** *S.K. Upadhyay*[1], K.K. Iyer[1], P.L. Paulose[1] and E.V. Sampathkumaran[1] *1. Department of Condensed Matter Physics and Material Science, Tata Institute of Fundamental Research, Mumbai, India, Mumbai, India*

**3:30**

**FD-09**. **Multiferroelectricity of perovskite manganates.** *D. Bogdan*[1], K. Chapagain[1], O. Chmaissem[1], S. Kolesnik[1], S. Kamba[2] and V. Goian[2] *1. Physics, Northern Illinois University, DeKalb, IL; 2. Institute of Physics, Academy of Sciences of the Czech Republic, Prague, Czech Republic*

**3:42**

**FD-10**. **Effect of the ionic size of the rare-earth dopant on the structural and magnetic properties of $HoCrO_3$.** *S. Yin*[1], M.S. Seehra[2] and M. Jain[1] *1. Physics, University of Connecticut, Storrs, CT; 2. Physics, West Virginia University, Morgantown, WV*

**3:54**

**FD-11. E-type Magnetic Order and Large Magneto-dielectric Effect in $Yb_2CoMnO_6$.** J. Blasco[1], *J. Garcia-Muñoz*[2], J. García[1], J. Stankiewicz[1], G. Subías[1], C. Ritter[3] and J. Rodríguez-Velamazán[3,1] *1. Instituto de Ciencia de Materiales de Aragón, CSIC-Universidad de Zaragoza, Zaragoza, Spain; 2. Institut de Ciència de Materials de Barcelona - CSIC, Bellaterra, Spain; 3. Institute Laue Langevin, Grenoble, France*

**4:06**

**FD-12. Electric Field Controlled Melting of Charge-Ordering in $Pr_{0.6}Ca_{0.4}MnO_3$ Single Crystals.** *C.V. Tomy*[1], H. Sharma[1], A. Tulapurkar[2], G. Balakrishnan[3], M.R. Lees[3] and D.M. Paul[3] *1. Physics Department, Indian Institute of Technology Bombay, Mumbai, India; 2. Electrical Engineering Department, Indian Institute of Technology Bombay, Mumbai, India; 3. Physics Department, University of Warwick, Coventry CV4 7AL, United Kingdom*

**4:18**

**FD-13. Second order phonon anomalies near the magnetic phase transitions in $BiFeO_3$ thin films.** *M.K. Singh*[1], G. Singh[1], A. Kumar[1], B. Khan[1] and R.S. Katiyar[2] *1. Centre of Material Sciences, University of Allahabad, Allahabad, India; 2. Department of Physics and Institute of Functional Nano Materials, University of Puerto Rico, PR 00931-3343, USA, SanJuan, PR*

THURSDAY AFTERNOON 1:30 — LA GALERIES 4-5

## Session FE
# SPIN-ORBIT AND VOLTAGE CONTROLLED EFFECTS

Pedram Khalili, Chair
UCLA, Los Angeles, CA

**1:30**

**FE-01. Determining spin-orbit torques easily: new domain wall depinning analysis scheme in comparison to spin torque magnetometry.** *K. Lee*[1], T. Schulz[1], B. Krüger[1], R. Lo Conte[1,2], G. Vijay Karnad[1], K. Garcia-Hernandez[3], L. Vila[4,5], B. Ocker[6], D. Ravelosona[3] and M. Kläui[1] *1. Physics, Johannes Gutenberg - University Mainz, Mainz, Germany; 2. Graduate School of Excellence "Materials Science in Mainz" (MAINZ), Mainz, Germany; 3. Institut d'Electronique Fondamentale, Orsay Cedex, France; 4. Université Grenoble Alpes, Grenoble, France; 5. CEA, Grenoble, France; 6. Singulus Technologies AG, Kahl am Main, Germany*

1:42

**FE-02**. **Reducing critical current density to switch perpendicular magnetization due to Spin Hall effect of Pt on $Co_xTb_{1-x}$ based multilayers.** *J. Rojas-Sanchez*[1], T. Pham[1], P. Vallobra[1], S. Je[2,3], T. Fache[1], M. Cyrille[4], O. Boulle[2], G. Gaudin[2], G. Malinowski[1], M. Hehn[1] and S. Mangin[1] *1. Institut Jean Lamour - Univ. Lorraine UMR7198 CNRS, 54506 Vandoeuvre les Nancy, France; 2. SPINTEC, CEA-INAC/CNRS/Univ. Grenoble Alpes, 38054 Grenoble, France; 3. Univ. Lorraine, 54506 Vandoeuvre lès Nancy, France; 4. CEA-LETI, 38054, 38054 Grenoble, France*

1:54

**FE-03**. **Significant Interfacial Contribution to the Spin-Orbit Torques in HM/FM Heterostructures with In-Plane Magnetization.** *A. Trifu*[1], I. Miron[1], C. Avci[2], K. Garello[2], J. Nath[1], S. Auffret[1], O. Boulle[1], P. Gambardella[2] and G. Gaudin[1] *1. Univ. Grenoble Alpes, INAC-SX / CEA, INAC-SX / CNRS, SX, SPINTEC, F-38000 Grenoble, France; 2. Department of Materials, ETH Zürich, Zürich, Switzerland*

2:06

**FE-04**. **Nanoscale Imaging of Magnetization Reversal Driven by Spin-Orbit Torque.** *I. Gilbert*[1], P.J. Chen[2], D.B. Gopman[2], A.L. Balk[1,3], D.T. Pierce[1], M. Stiles[1] and J. Unguris[1] *1. CNST, NIST, Gaithersburg, MD; 2. Materials Science & Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD; 3. Maryland NanoCenter, University of Maryland, College Park, MD*

2:18

**FE-05**. **Temperature Dependence of Spin-Orbit Torques in W/CoFeB Bilayers.** *W. Skowronski*[1], M. Cecot[1], J. Kanak[1], S. Zietek[1], T. Stobiecki[1], L. Yao[3], S. van Dijken[3], T. Nozaki[2], K. Yakushiji[2] and S. Yuasa[2] *1. Department of Electronics, AGH University of Science and Technology, Krakow, Poland; 2. Spintronics Research Center, AIST, Tsukuba, Japan; 3. School of Science, Aalto University, Espoo, Finland*

2:30

**FE-06**. **Electric Field Control of Magnetic Domain Wall Motion in CoFeB/MgO Devices.** *W. Lin*[1], N. Vernier[1], G. Agnus[1], K. Garcia[1], J. Langer[2], B. Ocker[2], E.E. Fullerton[3] and D. Ravelosona[1] *1. Institut d'Electronique Fondamentale, Université Paris-Sud - CNRS, Orsay, France; 2. Singulus Technology AG, Kahl am Main, Germany; 3. Center for Magnetic Recording Research, University of California San Diego, La Jolla, CA*

2:42

**FE-07**. **Voltage-induced spin-diode effect in magnetic tunnel junctions with in-plane and perpendicular effective anisotropy.** *M. Frankowski*[1], J. Checinski[1], W. Skowronski[1] and T. Stobiecki[1] *1. Department of Electronics, AGH University of Science and Technology, Krakow, Poland*

2:54

**FE-08**. **Detection of Voltage Excited Spin Wave by Pico-second Time-resolved Kerr Microscope.** *B. Rana*[1], Y. Fukuma[1,2], K. Miura[3], H. Takahashi[3] and Y. Otani[1,4] *1. Center for Emergent Matter Science, RIKEN, Wako, Japan; 2. Frontier Research Academy for Young Researchers, Kyushu Institute of Technology, Kawazu, Japan; 3. Research and development group, Hitachi Ltd., Tokyo, Japan; 4. ISSP, University of Tokyo, Kashiwa, Japan*

3:06

**FE-09**. **Parametric Amplifier of Spin Waves Using Electric Field.** *Y. Chen*[1], R.V. Verba[2], V. Tyberkevych[3], A.N. Slavin[3] and I. Krivorotov[1] *1. Physics and Astronomy, University of California, Irvine, Irvine, CA; 2. Institute of Magnetism, Kyiv, Ukraine; 3. Department of Physics, Oakland University, Rochester, MI*

3:18

**FE-10**. **Electric field dependence of magnetic damping of Fe-layer: A first-principles study.** *Y. Miura*[1], M. Tsujikawa[2] and M. Shirai[2] *1. Electrical Engineering and Electronics, Kyoto Institute of Technology, Kyoto, Japan; 2. RIEC and CSRN, Tohoku University, Sendai, Japan*

3:30

**FE-11**. **Magnetoelectric tuning of the Inverse spin-Hall effect.** *J. Vargas*[1], J. Gomez[1], L. Avilés-Félix[1] and A. Butera[1] *1. Magnetic Resonance Laboratory, Conicet / Bariloche Atomic Center, Bariloche, Argentina*

3:42

**FE-12**. **The Effect of DC Bias on Spin-Transfer Torque Driven Ferromagnetic Resonance in Magnetic Tunnel Junctions.** *M.C. Williamson*[1], H. Seinige[1], H. Almasi[2], X. Chao[3], W. Wang[2], J. Wang[3] and M. Tsoi[1] *1. Physics Department, University of Texas at Austin, Austin, TX; 2. Physics, University of Arizona, Tucson, AZ; 3. University of Minnesota, Minneapolis, MN*

3:54

**FE-13**. **Patterns and Thresholds of Magnetoelectric Switching in Spin Logic Devices.** *D.E. Nikonov*[1], S. Manipatruni[1] and I. Young[1] *1. Intel, Hillsboro, OR*

4:06

**FE-14**. **Towards Pure Voltage Induced Switching in CoFeB-MgO Perpendicular Magnetic Tunnel Junctions.** *M. Bapna*[1], S.K. Piotrowski[1], S. Oberdick[1] and S. Majetich[2,1] *1. Physics, Carnegie Mellon University, Pittsburgh, PA; 2. Carnegie Mellon University, Pittsburgh, PA*

**4:18**

**FE-15**. **Large Voltage-induced Modulation of Magnetic Anisotropy and Spin-orbit Torques in Hf/CoFeB/MgO Multilayer.** *F. Xue*[1], N. Sato[2], S. Wang[2] and J. He[1] *1. Department of Electrical Engineering, High Voltage Institution, Beijing, China; 2. Electrical Engineering, Stanford University, Stanford, CA*

THURSDAY AFTERNOON 1:30 — STUDIO 1-2

## Session FF

# MAGNETORESISTANCE II: GMR AND TMR

Connie Li, Chair
Naval Research Laboratory, Washington, DC

**1:30**

**FF-01**. **Tunneling across MgO barrier driven by double oxygen vacancies.** *E.N. Monteblanco Vinces*[1], B. Taudul[2], U. Halisdemir[2], D. Lacour[1], F. Schleicher[2], F. Montaigne[1], E. Beaurepaire[2], S. Boukari[2], M. Hehn[1], M. Alouani[2] and M. Bowen[2] *1. Institut Jean Lamour, Université de Lorraine - CNRS, Vandoeuvre les Nancy, France; 2. Institut de physique et Chimie des Matériaux de Strasbourg, CNRS, Strasbourg, France*

**1:42**

**FF-02**. **Tunneling Magnetoresistance with zero-moment half-metallic electrodes.** K. Borisov[1], D. Betto[1], Y. Lau[1], C. Fowley[2], *A. Titova*[2], N. Thiyagarajah[1], G. Atcheson[1], J. Lindner[2], A.M. Deac[2], M. Coey[1], P.S. Stamenov[1] and K. Rode[1] *1. Trinity College, Dublin, Dublin, Ireland; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

**1:54**

**FF-03**. **Correlation between MOKE amplitude measured in full sheet films and tunnel magnetoresistance in subsequently patterned tunnel junctions.** *T.H. Nguyen*[1], R.C. Sousa[1], S. Auffret[1], L. Vila[1] and B. Diény[1] *1. 1. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France*

**2:06**

**FF-04**. **Cation-ordered $MgAl_2O_4$ magnetic tunnel junctions with highly spin-polarized $Co_2FeAl$ electrodes.** *T. Scheike*[1,2], H. Sukegawa[1], K. Inomata[1], T. Ohkubo[1], K. Hono[1,2] and S. Mitani[1,2] *1. Magnetic Materials Unit, NIMS, Tsukuba, Japan; 2. University of Tsukuba, Tsukuba, Japan*

**2:18**

**FF-05**. **Spin Caloritronic Properties of Heusler Compound MTJs: From an Efficient Model to Improved Devices.** *A. Boehnke*[1], T. Huebner[1], U. Martens[2], A. Niesen[1], C. Sterwerf[1], J. Ludwig[1], A. Thomas[4], T. Kuschel[1,5], C. Heiliger[3], M. Münzenberg[2] and G. Reiss[1] *1. Physics Department, Bielefeld University, Bielefeld, Germany; 2. Institute of Physics, Ernst-Moritz-Arndt University, Greifswald, Germany; 3. I. Physikalisches Institut, Justus Liebig University, Giessen, Germany; 4. Institute for Metallic Materials, Leibniz Institute for Solid State and Materials Research Dresden (IFW Dresden), Dresden, Germany; 5. Zernike Institue for Advanced Materials, University of Groningen, Groningen, Netherlands*

**2:30**

**FF-06**. **Epitaxial Fe/$MgAl_2O_4$/Fe(001) magnetic tunnel junctions prepared by a direct sputtering technique and Mg-Al insertion.** *M. Belmoubarik*[1], H. Sukegawa[1], T. Ohkubo[1], S. Mitani[1] and K. Hono[1] *1. National Institute for Materials Science, Japan, Tsukuba, Japan*

**2:42**

**FF-07**. **Tuneable magnetism via charge transfer and orbital hybridization in molecular interfaces.** ***(Invited)*** *O. Cespedes*[1], F. Al Ma'Mari[1], T. Moorsom[1], S. Lee[2], T. Prokscha[3], H. Luetkens[3], M.D. Rogers[1], B. Hickey[1], D.A. Arena[4], M. Valvidares[5], G. Burnell[1], S. Langridge[6] and C. Kinane[6] *1. School of Physics & Astronomy, University of Leeds, Leeds, United Kingdom; 2. School of Physics & Astronomy, University of St. Andrews, St. Andrews, United Kingdom; 3. Laboratory for Muon Spin Spectroscopy, Paul Scherrer Institut, Villigen, Switzerland; 4. Physics, University of South Florida, Tampa, FL; 5. BOREAS beamline, ALBA Synchrotron Light Facility, Barcelona, Spain; 6. Rutherford Appleton Laboratory, ISIS Neutron and Muon Source, Didcot, United Kingdom*

**3:18**

**FF-08**. **Room Temperature Spin Filtering in Metallic Ferromagnet-Graphene-Ferromagnet Junctions.** *E. Cobas*[1], O. van 't Erve[1] and B. Jonker[1] *1. Naval Research Laboratory, Washington, DC*

**3:30**

**FF-09**. **Modeling the negative magnetoresistance of Ferromagnet-Graphene-Ferromagnet junction.** *O. van 't Erve*[1], E. Cobas[1] and B. Jonker[1] *1. Naval Research Laboratory, Washington, DC*

**3:42**

**FF-10**. **Perpendicular magnetic anisotropy induced at MgO/$Co_2FeSi$ and $Co_2FeSi$/MgO interfaces.** *S. Nakagawa*[1], K. Shinohara[1] and Y. Takamura[1] *1. School of Engineering, Tokyo Institute of Technology, Tokyo, Japan*

3:54

**FF-11**. **Tunnel magnetoresistance of perpendicular magnetic tunnel junctions with ultra-thin strained MnGa electrode.**
*K. Suzuki*[1], R. Ranjbar[2], J. Okabayashi[3], Y. Miura[4], A. Sugihara[5], H. Tsuchiura[6] and S. Mizukami[1] *1. WPI-AIMR, Tohoku University, Sendai, Japan; 2. Applied Physics, WPI Advanced Institute for Materials Research Tohoku University, Sendai, Japan; 3. Research Center for Spectrochemistry, University of Tokyo, Tokyo, Japan; 4. Electrical Engineering and Electronics, Kyoto Institute of Technology, Kyoto, Japan; 5. Tohoku University, Sendai, Japan; 6. Department of Applied Physics, Tohoku University, Sendai, Japan*

4:06

**FF-12**. **Measurement and Characterization of Nonlinearities in Magnetic Tunnel Junctions.** *E. Auerbach*[1], H. Arthaber[2], C. Abert[1], N. Leder[2] and D. Suess[1] *1. Institute of Solid State Physics, Vienna University of Technology, Vienna, Austria; 2. Institute of Electrodynamics, Microwave, and Circuit Engineering, Vienna University of Technology, Vienna, Austria*

4:18

**FF-13**. **Influence of heavy metal layers on voltage controllable perpendicular magnetic tunnel junctions.** *H. Almasi*[1], C. Sun[3], D. Reifsnyder Hickey[4], X. Li[2], T. Newhouse-Illige[1], Y. Xu[1], K. Price[1], C. Grezes[2], Q. Hu[5], P. Khalili[2,5], K.L. Wang[2], K.A. Mkhoyan[4], P. Voyles[3] and W. Wang[1] *1. Physics, University of Arizona, Tucson, AZ; 2. Electrical Engineering, University of California Los Angeles, Culver city, CA; 3. Materials Science and Engineering, University of Wisconsin, Madison, Madison, WI; 4. Engineering and Materials Science, University of Minnesota, Minneapolis, MN; 5. Inston Inc., Los Angeles, CA*

## Session FG
# RARE-EARTH-LEAN AND CE-SUBSTITUTED COMPOUNDS

Michael McGuire, Chair
Oak Ridge National Laboratory, Oak Ridge, TN

**1:30**

**FG-01**. **Phase Stability and formation energy of NdFe12(N) with Ti, V, Zr and Si substitutes- an alternative to NdFeB.** *G. Hrkac*[1,2], T.A. Ostler[3], L. Saharan[3], S. Westmoreland[4], R. Chantrell[5], R.F. Evans[4], M. Winklhofer[6], G. Zimanyi[7], T. Schrefl[8], J. Fischbacher[9], M. Yano[10,11], T. Shoji[10,11], A. Manabe[10], A. Kato[10] and N. Sakuma[10,11] *1. Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, United Kingdom; 2. Technical University of Vienna, Vienna, Austria; 3. College of Engineering, Mathematics and Physical Sciences, The University of Exeter, Exeter, United Kingdom; 4. Department of Physics, University of York, York, United Kingdom; 5. Physics, The University of York, York, United Kingdom; 6. University of Duisburg, Duisburg, Germany; 7. Physics, UC Davis, Davis, CA; 8. Danube University Krems, Wiener Neustadt, Austria; 9. Center for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria; 10. Technology Research Association of Magnetic Materials for High-efficiency Motors - MagHEM, Higashifuji-Branch, Susotno, Japan; 11. Advanced Material Engineering Div. Toyota Motor Corporation, Susono, Japan*

**1:42**

**FG-02**. **Metastable phase $YFe_{12}$ fabricated by a rapidly quenched method.** *H. Suzuki*[1] *1. Research & Development Group, Hitachi, Ltd., Hatoyama, Japan*

**1:54**

**FG-03**. **Self demagnetizing effects in $NdFe_{12}$ based magnets at high temperature.** *J. Fischbacher*[1], T. Schrefl[1], R. Chantrell[2], R.F. Evans[6], S. Westmoreland[2], G. Hrkac[5], M. Winklhofer[8], G. Zimanyi[4], A. Manabe[7], N. Sakuma[3,7], T. Shoji[3,7], A. Kato[3,7] and M. Yano[3,7] *1. Danube University Krems, Wiener Neustadt, Austria; 2. Physics, The University of York, York, United Kingdom; 3. Advanced Material Engineering Div., Toyota Motor Corporation, Susono-shi, Japan; 4. Physics, UC Davis, Davis, CA; 5. Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, United Kingdom; 6. Department of Physics, University of York, York, United Kingdom; 7. Higashifuji-Branch, Technology Research Association of Magnetic Materials for High-efficiency Motors (MagHEM), Mishuku, Japan; 8. Carl von Ossietzky Universität Oldenburg, Oldenburg, Germany*

2:06

**FG-04**. **Mössbauer and neutron study of $Zr_{1-x}Ce_xFe_{10}Si_2$ alloys for permanent magnet applications.** A. Martín-Cid[1], *D. Salazar*[1], J.M. Barandiaran[1,3], J.S. Garitaonandia[1,3], T. Hansen[4] and G. Hadjipanayis[2] *1. BCMaterials, Derio, Spain; 2. Physics and Astronomy, University of Delaware, Newark, DE; 3. University of the Basque Country, Bilbao, Spain; 4. Institut Max von Laue-Paul Langevin, Grenoble, France*

2:18

**FG-05**. **Magnetic Performance and Microstructure of Die-upset Anisotropic $(CeNd)_2Fe_{14}B$ Multiphase Magnets.** *C. Jin*[1], X. Tang[1], W. Yin[1], R. Chen[1] and A. Yan[1] *1. Ningbo Institute of Materials Technology & Engineering, CAS, Ningbo, China*

2:30

**FG-06**. **Coercivity enhancement through the synergies additions of Y and Ce for Nd-Ce-Fe-B sintered magnets.** *X. Fan*[1], S. Guo[2], K. Chen[2], R. Chen[2], D. Lee[2], C. You[3] and A. Yan[2] *1. Xi'an University of Technology; Ningbo Institute of Material Technology and Engineering, Ningbo, China; 2. Ningbo Institute of Material Technology and Engineering, Ningbo, China; 3. Xi'an University of Technology, Xi'an, China*

2:42

**FG-07**. **Permanant Magnet Materials with Abundant Rare Earth Elements: $La_xCe_{2-x}Co_{16}Ti$.** *B.S. Conner*[1], M. McGuire[1], S.K. Veedu[2], D. Parker[1] and B.C. Sales[1] *1. Oak Ridge National Laboratory, Oak Ridge, TN; 2. Materials Science & Technology, Oak Ridge National Laboratory, Oak Ridge, TN*

2:54

**FG-08**. **Coercivity enhancement of (Nd,Ce)-Fe-B sintered magnets by doping Nd-Fe additives.** *K. Chen*[1], S. Guo[1], X. Fan[2], G. Ding[1], L. Chen[1], R. Chen[1], D. Lee[1] and A. Yan[1] *1. Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences., Ningbo, China; 2. Xi'an University of Technology; Ningbo Institute of Material Technology and Engineering, Ningbo, China*

3:06

**FG-09**. **Tuning the megnetoelectric properties and microstructrue of hot-pressed and die-upset $(Nd,Ce)_2Fe_{14}B/CaF_2$ Composite magnets.** *L. Zheng*[1,2], F. Bai[2], R. JIang[1,2], M. Zhu[1] and W. Li[1] *1. Central Iron & Steel Research Institute, Beijing, China; 2. College of Materials Science and Engineering, Hebei University of Engineering, Handan, China*

**3:18**

**FG-10**. **Magnetic and electric structures in Sm based $ThMn_{12}$ phase observed by Mössbauer spectroscopy.** *M. Yano*[1,2], Y. Kobayashi[3], R. Masuda[3], Y. Yoda[4], S. Suzuki[5], T. Kuno[5], K. Urushibata[5], K. Kobayashi[5], N. Sakuma[1,2], A. Manabe[6] and M. Seto[3] *1. Advanced Material Engineering Div., Toyota Motor Corporation, Susono, Japan; 2. Higashifuji-Branch, Technology Research Association of Magnetic Materials for High-Efficiency Motors, Susotno, Japan; 3. Research Reactor Institute, Kyoto University, Sennan, Japan; 4. Japan Synchrotron Radiation Research Institute, Sayo, Japan; 5. Shizuoka Institute of Science and Technology, Fukuroi, Japan; 6. Higashifuji-Branch, Technology Research Association of Magnetic Materials for High-Efficiency Motors, Susono, Japan*

**3:30**

**FG-11**. **The Effect of Cerium Substitution in Nd-Fe-B Submicron Anisotropic Magnet Powders Obtained by Hydrogen Treatment.** *I. Poenaru*[1,2], A. Lixandru[1,2], K. Gueth[1], R. Gauss[1] and O. Gutfleisch[2,1] *1. Fraunhofer ISC – Project Group Materials Recycling and Resource Strategies IWKS, Hanau, Germany; 2. Technische Universität Darmstadt, Darmstadt, Germany*

THURSDAY AFTERNOON 1:30 — STUDIO 7-8

## Session FH
# MAGNETIC SENSORS III
Maria Torija, Chair
NVE Corporation, Eden Prairie, MN

**1:30**

**FH-01**. **Magnetic functionalities for flexible interactive electronics. *(Invited)*** *D. Makarov*[1] *1. Intelligent materials and devices, Helmholtz-Zentrum Dresden-Rossendorf e.V., Dresden, Germany*

**2:06**

**FH-02**. **Nonlinear magnetoelectric effect in Metglas/PZT composite and its application for highly-sensitive DC magnetic field sensor.** *M. Li*[1], H. Zhou[2], C. Dong[1] and N.X. Sun[1] *1. Electrical and Computer Engineering, Northeastern University, Boston, MA; 2. Mechanical Engineering, China Jiliang University, Hangzhou, China*

**2:18**

**FH-03**. **Graphene-based thin and flexible Hall sensors.** *U. Inkaya*[1], Y. Uysalli[1] and A. Oral[2] *1. Physics, Middle East Technical University, Ankara, Turkey; 2. Orta Dogu Teknik Universitesi, Ankara, Turkey*

**2:30**

**FH-04**. **Nanoparticle Detection Method Based on Non-Linear Magnetoimpedance Effect.** *J. Beato*[1,3], J. Perez-de Landazabal[2,3] and C. Gomez-Polo[2,3] *1. Physics, UPNA (universidad pública de Navarra), Pamplona, Spain; 2. Universidad Publica de Navarra, Pamplona, Spain; 3. INAMAT, Pamplona, Spain*

**2:42**

**FH-05**. **Development of Precise Magneto-Impedance Gradiometer for Magnetocardiograph.** *T. Uchiyama*[1] and T. Takiya[1] *1. Electrical Engineering, Nagoya University, Nagoya, Japan*

**2:54**

**FH-06**. **Absolute magnetic-field measurement using nanogranular in-gap magnetic sensor with second-harmonic and liquid-nitrogen-temperature operation.** *K. Tsukada*[1], T. Yasugi[1], Y. Majima[1], K. Sakai[2] and T. Kiwa[1] *1. Okayama University, Okayama, Japan; 2. Graduate School of Natural Science and Technology, Okayama University, Okayama, Japan*

**3:06**

**FH-07**. **Suppression of Magnetic Noise in MgO/CoFeB Based Sensors by Voltage Controlled Magnetic Anisotropy.** *P. Wisniowski*[1], M. Dabek[1], T. Stobiecki[1], S. Cardoso[2] and P.P. Freitas[2] *1. Department of Electronics, AGH University of Science and Technology, Krakow, Poland; 2. INESC-MN and IN- Institute of Nanoscience and Nanotechnology, Lisbon, Portugal*

**3:18**

**FH-08**. **Low Noise Tunneling Magnetoresistive Magnetic Field Sensors.** *J.G. Deak*[1], Z. Zhou[1] and W. Shen[2] *1. R&D, MultiDimension Technology Co., Ltd, Zhangjiagang, China; 2. Wafer Front End, MultiDimension Technology Co., Ltd, San Jose, CA*

**3:30**

**FH-09**. **Magnetic Field Sensor Performance in Magnetic Tunnel Junctions with Amorphous CoFeSiB Electrode for Bio-magentic Field Sensor Devices.** *D. Kato*[1], M. Oogane[1], K. Fujiwara[1], Y. Arai[1], J. Jono[2], H. Naganuma[1], M. Tsuchida[2] and Y. Ando[1] *1. Tohoku University, Sendai, Japan; 2. Konicaminolta Inc., Hachioji, Japan*

**3:42**

**FH-10**. **Effect of Metal Shielding on a Wireless Power Transfer System.** *J. Li*[1], X. Huang[1], C. Chen[1], L. Tan[1], W. Wang[1] and J. Guo[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

**3:42**

**FH-11**. **Mathematical Modelling of Tri-axial Field Simulator Cage for Large Volume Applications.** *A.G. Modi*[1], F. Kazi[1] and N. Singh[1] *1. Department of Electrical Engineering, , Veermata Jijabai Techonlogical Institute, Mumbai, India*

## Session FI

# FUNDAMENTAL PROPERTIES: SPIN GLASSES AND FRUSTRATION II

Maciej Misiorny, Chair
Chalmers University of Technology, Poznan, Poland

**1:30**

**FI-01**. **Artificial Magnets As Model Systems: From the Fragmentation of Magnetization to the 6-vertex Model. *(Invited)*** *B. Canals*[1], Y. Perrin[1], I. Chioar[1], V. Nguyen[1], D. Lacour[2], M. Hehn[2], F. Montaigne[2], A. Locatelli[3], T. Mentes[3], B. Santos[3] and N. Rougemaille[1] *1. CNRS - Institut NEEL, Grenoble, France; 2. IJL UMR 7198 CNRS, Vandoeuvre lès Nancy, France; 3. ELETTRA Sincrotrone, Trieste, Italy*

**2:06**

**FI-02**. **Magnetic diffuse scattering in artificial kagome spin ice.** *N. Leo*[1,2], O. Sendetskyi[1,2], L. Anghinolfi[1,2], V. Scagnoli[1,2], G. Möller[3], A. Alberca[2], J. Kohlbrecher[2], J. Lüning[4,5], U. Staub[2] and L. Heyderman[1,2] *1. Department of Materials, ETH Zurich, Zurich, Switzerland; 2. Paul Scherrer Institute, Villigen, Switzerland; 3. University of Kent, Canterbury, United Kingdom; 4. UPMC Univ. Paris 06, Sorbonne Universités, Paris, France; 5. CNRS, Paris, France*

**2:18**

**FI-03**. **Extended Magnetic Charge Structures in Square Artificial Spin Ice.** S. Mishra[1], *J.C. Lee*[1,2], V. Bhat[3], B.W. Farmer[4], X. Shi[1], L.E. De Long[3], S.D. Kevan[1,2] and S. Roy[1] *1. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 2. Materials Science, Lawrence Berkeley National Laboratory, Berkeley, CA; 3. Physics and Astronomy, University of Kentucky, Lexington, KY; 4. University of Kentucky, Lexington, KY*

**2:30**

**FI-04**. **Fluctuations of Single-domain Island Moments with Inter-island Interactions in Artificial Spin Ice.** *Y. Lao*[1], J. Sklenar[1], I. Gilbert[1,2], D. Gardeazabal[1], I. Carrasquillo[1], J.D. Watts[3,4], L. O'Brien[3,5], M. Manno[3], C. Leighton[3], A. Scholl[6], G. Chern[7], C. Nisoli[8] and P. Schiffer[1] *1. Department of Physics and Frederick Seitz Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL; 2. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD; 3. Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN; 4. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN; 5. Thin Film Magnetism Group, Department of Physics, Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 6. Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA; 7. Department of Physics, University of Virginia, Charlottesville, VA; 8. Theoretical Division Division and Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, NM*

**2:42**

**FI-05**. **Magnetotransport in connected artificial spin ice networks - effects beyond the ice model.** *J. Sklenar*[1], B.L. Le[1], J. Park[1], G. Chern[2], C. Nisoli[3], J.D. Watts[5], M. Manno[4], D. Rench[6], N. Samarth[6], C. Leighton[4] and P. Schiffer[1] *1. Physics and Frederick Seitz Materials Research Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL; 2. Physics, University of Virginia, Charlottesville, VA; 3. Theoretical Division, LANL, Los Alamos, NM; 4. Chemical Engineering and Material Science, University of Minnesota, Minneapolis, MN; 5. Physics, University of Minnesota, Minneapolis, MN; 6. Physics and Materials Research Institute, Pennsylvania State University, University Park, PA*

**2:54**

**FI-06**. **Vogel-Fulcher-type freezing in artificial spin ice observed via resonant soft X-ray photon correlation spectroscopy (XPCS).** *S. Morley*[1], D. Alba Venero[2], J. Porro[2], S.T. Riley[3], A. Stein[4], P. Steadman[5], R. Stamps[6], S. Langridge[2] and C.H. Marrows[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom; 2. ISIS, Rutherford Appleton Laboratory, Didcot, United Kingdom; 3. School of Electrical and Electronic Engineering, University of Leeds, Leeds, United Kingdom; 4. CFN, Brookhaven National Laboratory, Upton, NY; 5. Diamond Light Source, Oxford, United Kingdom; 6. University of Glasgow, Glasgow, United Kingdom*

**3:06**

**FI-07**. **Glassy dynamics in ferromagnetic/antiferromagnet bilayers.** *T. Ma*[1], X. Cheng[1], S. Boettcher[1] and S. Urazhdin[1] *1. Physics, Emory University, Atlanta, GA*

**3:18**

**FI-08**. **Nanosecond Elastic Step Cooperative Response in Spin Crossover Compounds.** C. Enachescu[1], *L. Stoleriu*[1], A. Stancu[1] and E. Collet[2] *1. Department of Physics, Al. I. Cuza University, Iasi, Romania; 2. Institut de Physique de Rennes, Université de Rennes, Rennes, France*

**3:30**

**FI-09**. **Concepts of Ferrovalley Material and Anomalous Valley Hall Effect.** *W. Tong*[1] *1. East China Normal University, Shanghai, China*

**3:42**

**FI-10**. **Supercooled Spin Liquid Behavior In Pyrochlore Titanates.** *A. Eyvazov*[1], A. Eyal[1] and S. Davis[1,2] *1. Department of Physics, Cornell University, Ithaca, NY; 2. Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, NY*

**3:54**

**FI-11**. **Structure and Physical Properties of $SrNiRu_5O_{11}$ Single Crystals: A New R-Type Ferrite Based on Ordered Kagome Nets.** *L.E. De Long*[1], L. Shlyk[2] and R. Niewa[2] *1. Physics and Astronomy, University of Kentucky, Lexington, KY; 2. Institute for Inorganic Chemistry, University of Stuttgart, Stuttgart, Germany*

**4:06**

**FI-12**. **Yttrium Dilution in the Geometrically Frustrated Pyrochlore $Gd_2Ti_2O_7$.** *J.G. Ramon*[1], R.S. Freitas[1], M. Moraes Leite[2], F. Maron Vichi[2] and J.S. Gardner[3] *1. Institute of Physics, University of Sao Paulo, Sao Paulo, Brazil; 2. Institute of Chemistry, University of Sao Paulo, Sao Paulo, Brazil; 3. Neutron Group, NSRRC, Hsinchu, Taiwan*

**4:18**

**FI-13**. **Magnetic properties of V and Nb clusters: spin-lattice relaxation and spin-impurity screening.** *A. Kirilyuk*[1], A. Diaz Bachs[1], V. Chernyy[1], R. Logemann[1] and E. Muskens[1] *1. Institute for Molecules and Materials, Radboud University Nijmegen, Nijmegen, Netherlands*

THURSDAY AFTERNOON 2:30 | GRAND BALLROOM

## Session FP
# ULTRAFAST SWITCHING AND DOMAIN WALL MOTION (Poster Session)

Markus Münzenberg, Co-Chair
Ernst-Moritz-Arndt University, Greifswald, Germany
Gregory Malinowski, Co-Chair
Institut Jean Lamour, Vandoeuvre-lès-Nancy, France

**FP-01**. **Dynamics of an incomplete skyrmion state in confined helimagnetic nanostructures.** *M. Beg*[1], M. Albert[1], M. Bisotti[1], D.I. Cortes[1], W. Wang[2], R. Carey[1], M. Vousden[1], O. Hovorka[1] and H. Fangohr[1] *1. Faculty of Engineering and the Environment, University of Southampton, Southampton, United Kingdom; 2. School of Science, Ningbo University, Ningbo, China*

**FP-02**. **Photo-assisted magnetization reversal in a perpendicularly magnetized $L1_0$ FePt film with single ultrafast laser pulse.** *J. Shi*[1], Z. Zhang[1], S. Zhou[2], H. Zhao[1] and L. Chen[1] *1. Shanghai Ultra-precision Optical Engineering Research Center, and Key Laboratory of Micro and Nano Photonic Structures (Ministry of Education), Department of Optical Science and Engineering, Fudan University, Shanghai, China; 2. Shanghai Key Laboratory of Special Artificial Microstructure Materials and Technology and Pohl Institute of Solid State Physics and School of Physics Science and Engineering, Tongji University, Shanghai, China*

**FP-03**. **Periodic domain configurations in single crystal nickel nanowires.** *M.V. Lubarda*[1,2], J. Kan[2], S. Manna[4], K.T. Chan[2], V. Uhlir[2], V. Lomakin[3] and E.E. Fullerton[2,4] *1. Faculty of Polytechnics, University of Donja Gorica, Podgorica, Montenegro; 2. Center for Memory and Recording Research, University of California, San Diego, La Jolla, CA; 3. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA; 4. Nanoengineering, University of California San Diego, La Jolla, CA*

**FP-04**. **Cumulative Effect in Helicity-Dependent All-Optical Switching of TbCo Films.** *J. Chen*[1], L. He[1], D.T. Valley[2], D.J. Flannigan[2], J. Wang[1] and L. Mo[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN; 2. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN*

**FP-05**. **Laser Induced Ultrafast Magnetization Reversal in TbCo Film.** *W. Cheng*[1,2], X. Li[1], H. Wang[2], X. Cheng[1,2] and X. Miao[1,2] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 2. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China*

**FP-06**. **Steady Motion of Skyrmions and Domains Walls under Spin-diffusive Torques.** *G. Elías*[1,2], A. Manchon[3] and N. Vidal-Silva[1] *1. Physics, Universidad de Santiago, Santiago, Chile; 2. Physics, Cedenna, Santiago, Chile; 3. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia*

**FP-07**. **Atomistic simulation of heat assisted linear reversal mode in nano-dots with perpendicular anisotropy.** *Y. Wang*[1], T. Tanaka[1] and K. Matsuyama[1] *1. Faculty of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan*

**FP-08**. **Vortex Motion in Amorphous Ferrimagnetic Thin Film Elements.** *H. Oezelt*[1], E. Kirk[2,3], P. Wohlhüter[2,3], E. Müller[4], L. Heyderman[2,3], A. Kovacs[1] and T. Schrefl[1] *1. Center for Integrated Sensor Systems, Danube University Krems, Wiener Neustadt, Austria; 2. Laboratory for Micro- and Nanotechnology, Paul Scherrer Institute, Villigen PSI, Switzerland; 3. Laboratory for Mesoscopic Systems, ETH Zurich, Zurich, Switzerland; 4. Laboratory of Biomolecular Research, Paul Scherrer Institute, Villigen PSI, Switzerland*

**FP-09**. **Ultrafast optical control of magnetization in yttrium iron garnet films.** *L. Shen*[1], L. Zhou[2], J. Shi[1], Z. Zheng[1], H. Zhao[1], D. Wu[2] and L. Chen[1] *1. Department of Optical Science and Engineering, Fudan University, Shanghai, China; 2. Department of Physics, Nanjing University, Nanjing, China*

**FP-10**. **Ultrafast Control of Magnetic Order in Magnetically Doped Topological Insulator Thin Films.** *Y. Ni*[1], L. Luo[2,3], Z. Zhang[4], C.I. Nlebedim[3], J. Wang[2,3] and D.C. Jiles[1] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA; 2. Department of Physics and Astronomy, Iowa State University, Ames, IA; 3. Ames Laboratory, U.S. Department of Energy, Ames, IA; 4. School of Materials Engineering, Purdue University, West Lafayette, IN*

**FP-11. Quenching of the Resonant Magnetic Scattering by Ultra-Short Free-Electron Laser Pulses.** *L. Müller*[1,4], M.H. Berntsen[5], W. Roseker[1], A. Kobs[1], K. Bagschik[6], J. Wagner[6], R. Frömter[3], M. Danailov[7], F. Capotondi[7], E. Pedersoli[7], M. Manfredda[7], M. Kiskinova[7], H. Oepen[2] and G. Grübel[1] *1. FS-CXS, DESY, Hamburg, Germany; 2. Institute of Nanostructure and Solid State Physics, University of Hamburg, Hamburg, Germany; 3. Institut für Angewandte Physik, Universität Hamburg, Hamburg, Germany; 4. University Hamburg, Hamburg, Germany; 5. KTH, Stockholm, Sweden; 6. Institut für Nanostruktur- und Festkörperphysik, University Hamburg, Hamburg, Germany; 7. Elettra-Sincrotrone Trieste, Trieste, Italy*

**FP-12. Modeling of domain wall motion in multiferroic heterostructures.** *Z. Xiao*[1], C. Liang[2], G. Carman[2] and R.N. Candler[1,3] *1. Electrical Engineering, University of California, Los Angeles, CA; 2. Mechanical and Aerospace Engineering, University of California, Los Angeles, Los Angeles, CA; 3. California NanoSystems Institute, Los Angeles, CA*

**FP-13. Current-induced Domain Wall Motion Modulated by Magnetic Pinning in Zigzag Shaped Nanowires.** X. Zhou[1], Z. Huang[1], W. Zhang[1], J. Yue[1], Q. Chen[1], Y. Yin[1], H. Yuan[1], *Y. Zhai*[1,2] and S. Dong[1] *1. Department of Physics, Southeast University, Nanjing, China; 2. National Laboratory of Solid State Microstructures, Nanjing University, Nanjing, 210093, China*

THURSDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session FQ

# MAGNETIZATION DYNAMICS III: SPIN PUMPING AND OTHER EFFECTS (Poster Session)

Yan Zhou, Chair
University of Hong Kong, Hong Kong

**FQ-01. Demagnetisation energy and magnetisation variation effects on the confined isolated skyrmion state dynamics.** *M. Beg*[1], M. Albert[1], M. Bisotti[1], D.I. Cortes[1], W. Wang[2], R. Carey[1], M. Vousden[1], O. Hovorka[1] and H. Fangohr[1] *1. Faculty of Engineering and the Environment, University of Southampton, Southampton, United Kingdom; 2. School of Science, Ningbo University, Ningbo, China*

**FQ-02. Spin Transfer Torque Magnetization Reversal In Hard/Soft Composite Structures.** *M. Kuteifan*[1], C.A. Lambert[4], M.V. Lubarda[3], S. Mangin[2] and V. Lomakin[1] *1. Department of Electrical and Computer Engineering, University of California, San Diego, La Jolla, CA; 2. Institut Jean Lamour, Universite de Lorraine, Vandoeuvre-les-Nancy, France; 3. Faculty of Polytechnics, University of Donja Gorica, Podgorica, Montenegro; 4. University of California, Berkeley, CA*

**FQ-03**. **Rate-Dependent Extensions of the Parametric Magneto-Dynamic Model with Magnetic Hysteresis.** S. Steentjes[1], M. Petrun[2], *G. Glehn*[1], D. Dolinar[2] and K. Hameyer[1] *1. Institute of Electrical Machines, RWTH Aachen University, Aachen, Germany; 2. FERI, University of Maribor, Maribor, Slovenia*

**FQ-04**. **Large spin pumping effect in antisymmetric precession of $Ni_{79}Fe_{21}/Ru/Ni_{79}Fe_{21}$.** *H. Yang*[1], Y. Li[1] and W. Bailey[1] *1. Applied Physics and Applied Mathematics, Columbia University, New York, NY*

**FQ-05**. **Element specific magnetisation dynamics at NiFe/Cr interfaces.** *D.M. Burn*[1], R. Fan[1], D. Atkinson[2] and P. Steadman[1] *1. Diamond Light Source, Harwell, United Kingdom; 2. Durham University, Durham, United Kingdom*

**FQ-06**. **Dependence of spin dynamics on nitrogen site ordering in γ'-$Fe_4N$ thin films.** *S. Isogami*[1] *1. Fukushima National College of Technology, Iwaki, Japan*

**FQ-07**. **Voltage tuning spin wave resonance at ferromagnetic/ferroelectric interfaces.** *M. Zhu*[1], Z. Zhou[1], W. Ren[1], Z. Ye[1,2] and M. Liu[1] *1. School of Electrical and Information Engineering, Xi'an Jiaotong University, Xi'an, China; 2. Department of Chemistry and 4D LABS, Simon Fraser University, Burnaby, BC, Canada*

**FQ-08**. **Manipulation of magnetization in GaMnAs layers by spin-orbit induced field.** *S. Lee*[1], S. Choi[1], S. Bac[1], A. Nasir[1], S. Lee[1], X. Liu[2] and J. Furdyna[2] *1. Physics, Korea University, Seoul, The Republic of Korea; 2. Physics, University of Notre Dame, Notre Dame, IN*

**FQ-09**. **Exchange-coupling Induced Anisotropy Modulation of Fe-CoO Films Triggered by Photo-induced Charge Transfer Effect.** *Z. Zheng*[1], H. Zhao[1], J. Shi[1], L. Shen[2], Y. Wu[3] and T. Gu[3] *1. Department of Optical Science and Engineering, Fudan University, Shanghai, China; 2. Fudan, Shanghai, China; 3. Physics Department, Fudan University, Shanghai, China*

**FQ-10**. **1- Dimensional $Fe_x$ $Co_{1-x}$ nanowires; Ferromagnetic Resonance and Magnetization dynamics.** *S. Aslam*[1,2], M. Khanna[2] and B.K. Kuanr[1,3] *1. Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, India; 2. Bhaskaracharya College of Applied Sciences, University of Delhi, New Delhi, India; 3. Department of Physics, University of Colorado at Colorado Springs, Colorado Springs, CO*

**FQ-11**. **Investigating Nanodevices Driven by the Spin Hall Effect with Nitrogen-Vacancy Centres in Diamond.** *Z. Flansberry*[1], A. Solyom[1], A. Bourassa[1,2], L. Childress[1] and J.C. Sankey[1] *1. Physics, McGill University, Montreal, QC, Canada; 2. University of Chicago, Chicago, IL*

**FQ-12**. **Field fluctuations due to thermally excited spin waves.** *J. Liu*[1], S. Yoon[1,2] and B. McMichael[1] *1. Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD; 2. Maryland Nanocenter, University of Maryland, College Park, MD*

**FQ-13**. **Ultra-high Frequency Vortex Resonance in a Ferromagnetic Disk with Nanoscale Dent.** *J. Ding*[1], S. Lendinez[1], P.N. Lapa[1,2], T. Khaire[1], J.E. Pearson[1], A. Hoffmann[1] and V. Novosad[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Texas A&M University, College Station, TX*

**FQ-14**. **Measurement of Spin Pumping in Py/α-W and Py/β-W Heterostrucutures via Ferromagnetic Resonance.** *W. Cao*[1], J. Liu[1], K. Barmak[1] and W. Bailey[1] *1. Applied Physics and Applied Mathematics, Columbia University, New York, NY*

**FQ-15**. **Spin pumping in single crystalline Fe/Pt heterostructure by broadband ferromagnetic resonance measurement.** Y. Huo[1], F. Zeng[1], *C. Zhou*[2] and Y. Wu[1] *1. Physics, Fudan University, Shanghai, China; 2. Fudan University, Shanghai, China*

THURSDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session FR
## EMERGENT AND NOVEL MAGNETIC ORDER IN THIN FILMS II (Poster Session)

Hendrik Ohldag, Chair
SLAC National Accelerator Laboratory, Menlo Park, CA

**FR-01**. **Effect of epitaxial strain on magnetic and transport behaviors in metamagnetic FeRh thin films.** *Y. Xie*[1], Q. Zhan[1], T. Shang[1], H. Yang[1], B. Wang[1] and R. Li[1] *1. Ningbo Institute of Industrial Technology, Chinese Academy of Sciences., Ningbo, China*

**FR-02**. **Effect of Tungsten Layer Thickness Variation on Interfacial Dzyaloshinskii-Moriya Interaction in W/CoFeB/$SiO_2$ Heterostructures.** *A.K. Chaurasiya*[1], C. Banerjee[1], S. Choudhury[1], S. Sahoo[1], S. Saha[1], J. Sinha[1] and A. Barman[1] *1. Condensed Matter Physics and Material Sciences, S N Bose National Centre For Basic Sciences, Kolkata, India*

**FR-03**. **Enhancement of Magnetic Circular Dichroism in Bi-layered ZnO-Bi:YIG Thin Films.** *S. Mito*[1], Y. Shiotsu[1], J. Sasano[2], H. Takagi[2] and M. Inoue[2] *1. National Institute of Technology, Tokyo college, Hachioji, Japan; 2. Toyohashi University of Technology, Toyohashi, Japan*

**FR-04**. **Interfacial Dzyaloshinskii-Moriya interaction and orbital magnetic moments of metallic multilayer films.** *K. Yamamoto*[1], K. Nawa[1], A. Pradipto[1,2], T. Akiyama[1], T. Ito[1], T. Ono[2] and K. Nakamura[1] *1. Physics Engineering, Mie University, Tsu City, Japan; 2. Institute for Chemical Research, Kyoto University, Uji, Japan*

**FR-05**. **Magnetic behavior of nickel ferrite films co-fired with hafnium oxide.** *W. Straka*[1] and J. Schwartz[1] *1. Materials Science and Engineering, NC State University, Raleigh, NC*

**FR-06**. **Magnetic phases of thin terbium films.** *F.H. Sales*[1], A.S. Carriço[2] and A.L. Dantas[3] *1. IFMA, São Luis, Brazil; 2. Department of Physics, Universidade Federal do Rio Grande do Norte, Natal, Brazil; 3. Departament of Physics, University of State of Rio Grande do Norte, Natal, Brazil*

**FR-07**. **Physical properties of ultrathin $La_{0.8}Sr_{0.2}CoO_3/SrTiO_3$: Nb heterojunctions.** *Y. Li*[1], S. Peng[1], T. Mao[1], D. Wang[1] and K. Wu[1] *1. Faculty of Science, Wuhan University of Science and Technology, Wuhan, China*

**FR-08**. **Reversible Hydrogenation Induced Spin-Reorientation Transition In $Co_{50}Pd_{50}$ Alloy Thin Films.** *P. Chang*[1], Y. Chen[1], C. Hsu[1], V. Mudinepalli[1] and W. Lin[1] *1. Department of Physics, National Taiwan Normal University, Taipei, Taiwan*

**FR-09**. **Spin-Vortex Resonance In Patterned Ferromagnetic/ Superconducting Structures.** *S. Lendinez*[1], J. Ding[1], P.N. Lapa[1,2], G. Karapetrov[3], J.E. Pearson[1] and V. Novosad[1] *1. Materials Science Division, Argonne National Laboratory, Lemont, IL; 2. Texas A&M University, College Station, TX; 3. Drexel University, Philadelphia, PA*

**FR-10**. **Strain effect on the magnetic and electronic transport properties of $LaCoO_3$ films.** *Y. Li*[1], T. Mao[1], S. Peng[1], D. Wang[1], K. Wu[1] and J. Sun[2] *1. Faculty of Science, Wuhan University of Science and Technology, Wuhan, China; 2. State key laboratory for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**FR-11**. **The Ferromagnetic Phase in MnAl/Ag Thin Films.** *K. Yang*[1] and R.A. Lukaszew[1] *1. Department of Physics, College of William and Mary, Williamsburg, VA*

**FR-12**. **Thermally Activated Magnetism in the Diffuse Interface between Ferromagnetic Metal and Antiferromagnetic Oxide.** *M. Jung*[1], M. Im[2], B. Lee[3], K. Lee[4] and J. Hong[1,5] *1. Emerging Materials Science, Daegu Gyeongbuk Institute of Science and Technology, Daegu, The Republic of Korea; 2. CXRO, Lawrence Berkeley National Laboratory, Berkeley, CA; 3. Center for Core Research Facility, DGIST (Daegu Gyeongbuk Inst. of Sci. and Tech.), Daegu, The Republic of Korea; 4. School of Materials Science and Engineering, Ulsan National Institute of Science Technology, Ulsan, The Republic of Korea; 5. Research Center for Emerging Materials, DGIST (Daegu Gyeongbuk Inst. of Sci. and Tech.), Daegu, The Republic of Korea*

**FR-13**. **The role of an interfacial FeCu alloy on the magnetism in nanostructured thin films of Fe in Cu.** *R.D. Desautels*[1,2], C. Shueh[3], K. Lin[3], J.W. Freeland[4] and J. van Lierop[1] *1. Physics and Astronomy, University of Manitoba, Winnpeg, MB, Canada; 2. Quantum Condensed Matter Division, Oak Ridge National Laboratory, Oak Ridge, TN; 3. Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan; 4. Argonne National Laboratory, Argonne, IL*

**FR-14**. **Vortex-Antivortex coexistence in Nb based Superconductor/ Ferromagnet heterostructures.** *A.M. Cucolo*[1,2], F. Bobba[1,2], C. Di Giorgio[1], D. D'Agostino[1], A. Scarfato[1], M. Iavarone[3], S.A. Moore[3], G. Karapetrov[4], V. Novosad[5] and V. Yefremenko[5] *1. Department of Physics "E.R. Caianiello", University of Salerno, Salerno, Italy; 2. CNR-SPIN, Salerno, Italy; 3. Department of Physics, Temple University, Philadelphia, PA; 4. Department of Physics, Drexel University, Philadelphia, PA; 5. Materials Science Division, Argonne Nat Lab, Argonne, IL*

**FR-15**. **New Domain Wall Contrast in Ultrathin Magnetic Film Imaged by Spin Polarized Low Energy Electron Microscopy.** *C. Zhou*[1], G. Chen[2], J. Liang[1], A.K. Schmid[2] and Y. Wu[1] *1. Department of Physics, State Key Laboratory of Surface Physics, Fudan University, Shanghai, China; 2. NCEM, Lawrence Berkeley National Lab, Berkeley, CA*

THURSDAY AFTERNOON 2:30 | GRAND BALLROOM

### Session FS

## SPIN INJECTION, SPIN TRANSFER TORQUE AND SPIN-ORBIT INTERACTION (Poster Session)

Shingo Tamaru, Chair
National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan

**FS-01**. **Spin Polarization enhancement at the n-MnSb(0001)/ GaAs(111) Interface.** C.E. Ouserigha[1], H. Wang[1], C. Burrows[1], *T.P. Hase*[1] and G. Bell[1] *1. Physics, University of Warwick, Coventry, United Kingdom*

**FS-02**. **Bias Dependence of Tunneling Spin Injection into Graphene.** *T. Zhu*[1], H. Wen[3], S. Singh[1], J. Katoch[1], W. Amamou[2] and R. Kawakami[1] *1. Department of Physics, The Ohio State University, Columbus, OH; 2. Material Science and Engineering Program, University of California, Riverside, CA; 3. Department of Physics, Pennsylvania State University, University Park, PA*

**FS-03**. **Temperature dependence of spin-to-charge conversion in $MoS_2$ monolayer from spin pumping.** P. Bonnet[1], C. Cheng[1], M. Collet[1], B. Dlubak[1], P. Seneor[1], H. Kim[2], G. Han[2], Y. Lee[2], H. Yang[2] and *A. Anane*[1] *1. Unité Mixte de Physique CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, Plaiseau, France; 2. CINAP Institute for Basic Science; Department of Energy Science, Sungkyunkwan University, Suwon, The Republic of Korea*

**FS-04**. **A role of impurity- and phonon-induced momentum scattering to spin lifetime in degenerate Si.** *S. Lee*[1], N. Yamashita[1], S. Dushenko[1], Y. Ando[1], H. Koike[2] and M. Shiraishi[1] *1. Department of Electronic Science and Engineering, Kyoto University, Kyoto, Japan; 2. Technology HQ, TDK Corporation, Ichikawa, Japan*

**FS-05**. **Field-angle and DC-bias Dependence of the Spin-torque Diode Effect in Giant-magnetoresistive Microstripe.** *X. Li*[1], Y. Zhou[2], M. Chan[3] and P. Pong[1] *1. Department of Electrical and Electronic Engineering, The University of Hong Kong, Hong Kong, Hong Kong; 2. Physics, University of Hong Kong, Hong Kong, Hong Kong; 3. Department of Electronic and Computer Engineering, Hong Kong University of Science and Technology, Hong Kong, Hong Kong*

**FS-06**. **Spin transfer torque switching in nano-pillars with SAF reference layer.** *M. Arora*[1], C. Fowley[2], T. Mckinnon[1], E. Kowalska[2], V. Sluka[3], A.M. Deac[2], B. Heinrich[1] and E. Girt[1] *1. Department of Physics, Simon Fraser University, Burnaby, BC, Canada; 2. Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. Department of Physics, New York University, New York, NY*

**FS-07**. **All-Spin-Orbit Switching of Perpendicular Magnetization.** *M. Kazemi*[1], G. Rowlands[2], S. Shi[3], R. Buhrman[3] and E. Friedman[1] *1. Electrical Engineering, University of Rochester, Rochester, NY; 2. Quantum Information Processing, BBN Technologies, Cambridge, MA; 3. School of Applied and Engineering Physics, Cornell University, Ithaca, NY*

**FS-08**. **Intrinsic spin-orbit torque in a single domain nanomagnet.** A. Kalitsov[1], *S. Nikolaev*[2], J. Velev[3] and M. Chshiev[2] *1. MINT Center, University of Alabama, Tuscaloosa, AL; 2. UMR 8191 CEA/CNRS/UJF, SPINTEC, Grenoble, France; 3. University of Puerto Rico, San Juan, PR*

**FS-09**. **Electrical control over perpendicular magnetization switching driven by spin-orbit torques.** X. Zhang[1], C. Wan[1], Z. Yuan[1], Q. Zhang[1], H. Wu[1], L. Huang[1], W. Kong[1], C. Fang[1], U. Khan[1] and *X. Han*[1] *1. Beijing National Laboratory for Condensed Matter Physics, Institute of Physics, Chinese Academy of Sciences, Beijing, China*

**FS-10**. **Spin-Orbit Torque Control of Dipole Field-Localized Spin Wave Modes.** *C. Zhang*[1], Y. Pu[1], S.A. Manuilov[1], E. Blomberg[1], S. White[1], V.P. Bhallamudi[1], W. Ruane[1], D.V. Pelekhov[1] and P. Hammel[1] *1. Department of Physics, The Ohio State University, Columbus, OH*

**FS-11**. **Magneto-optic investigation of spin-orbit torque in MBE-grown heterostructures.** *D.J. O'Hara*[1], Y. Luo[2], K. Jamison[2], A. Ahmed[2], W. Amamou[1], I.V. Pinchuk[2], M. Newburger[2], E.J. Bushong[2] and R. Kawakami[2,1] *1. Materials Science and Engineering, University of California, Riverside, CA; 2. Physics, The Ohio State University, Columbus, OH*

**FS-12**. **Spectral Linewidth of Spin-Current Nano-Oscillators Driven by Nonlocal Spin Injection.** *S. Urazhdin*[1], V.E. Demidov[2], B. Divinskiy[2] and S. Demokritov[2] *1. Physics, Emory University, Atlanta, GA; 2. Institute for Applied Physics, University of Muenster, Muenster, Germany*

**FS-13**. **Very high Q factor in elliptical shaped spin torque oscillators.** *B. Wang*[1], H. Kubota[1], K. Yakushiji[1], A. Fukushima[1] and S. Yuasa[1] *1. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

**FS-14**. **Measurements of the lifetime and generation time of magnetic droplet solitons.** *J. Hang*[1], C. Hahn[1], N. Statuto[2], F. Macia[2,3] and A.D. Kent[1] *1. Department of Physics, New York University, New York, NY; 2. Dept. of Condensed Matter Physics, University of Barcelona, Barcelona, Spain; 3. Institut de Ciencia de Materials de Barcelona, Bellaterra, Spain*

**FS-15**. **Spin transfer torque mechanisms in three terminal spin-torque oscillators.** *E. Jué*[1], W. Rippard[1], M. Pufall[1] and E.R. Evarts[1] *1. Spin Electronics Group, National Institute of Standards and Technology, Boulder, CO*

THURSDAY AFTERNOON 2:30 | GRAND BALLROOM

## Session FT

# MULTI-LAYER FILMS AND SUPERLATTICES II (Poster Session)

Wen-Chin Lin, Chair
National Taiwan Normal University, Taipei, Taiwan

**FT-01**. **Magnetic leverage effects in amorphous SmCo/CoAlZr heterostructures.** *T.P. Hase*[1], R. Procter[1], F. Magnus[2,3], G. Andersson[3], C. Sanchez-Hanke[4,5] and B. Hjörvarsson[3] *1. Physics, University of Warwick, Coventry, United Kingdom; 2. Science Institute, University of Iceland, Reykjavik, Iceland; 3. Dept of Physics and Astronomy, Uppsala University, Uppsala, Sweden; 4. NSLS, Brookhaven National Laboratory, Upton, NY; 5. DIAMOND Light Source, Didcot, United Kingdom*

**FT-02**. **Angular Dependence of Resonant Absorption in Coupled Magnetic Thin Films.** *D.J. Adams*[1,2], P. Poudyal[1,2], M.A. Khan[1,2] and L. Spinu[1,2] *1. Physics, University of New Orleans, New Orleans, LA; 2. Advanced Materials Research Institute, University of New Orleans, New Orleans, LA*

**FT-03**. **[CoPd/Pd] and [Co/Pd] hybrid stacks for the memory layer of high density magnetic random access memory cells.** *X. Dong*[1], D. Oshima[1], T. Kato[1], Y. Sonobe[2] and S. Iwata[1] *1. Nagoya University, Nagoya, Japan; 2. Samsung R&D Institute Japan, Yokohama, Japan*

**FT-04**. **Synthetic antiferromagnets with vortices and antivortices in domain walls.** *A. Ognev*[1], A.S. Samardak[1], A.G. Kolesnikov[1], M.E. Stebliy[1], E. Pustovalov[1], V.S. Plotnikov[1], O. Tretiakov[1,2] and L. Chebotkevich[1] *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Tohoku University, Sendai, Japan*

**FT-05**. **Hybridization-Induced Large XMCD of Carbon in Pd-Fe-$C_{60}$ Composite Thin Films.** *K. Hsu*[1], H. Hsu[1], P. Chang[1], C. Hsu[1] and W. Lin[1] *1. Department of Physics, National Taiwan Normal University, Taipei, Taiwan*

**FT-06**. **Co L-edge and Pd M-edge XMCD in perpendicular magnetic anisotropy system: Co/Pd multilayers.** *J. Okabayashi*[1] and H. Munekata[2] *1. The University of Tokyo, Research Center for Spectrochemistry, Tokyo, Japan; 2. Tokyo Institute of Technology, Yokohama, Japan*

**FT-07**. **Effect of nanostructure layout on spin pumping phenomena in antiferromagnet/ nonmagnetic metal/ ferromagnet multilayered stacks.** *A. Kravets*[1,2], D. Polishchuk[1,2], Y. Tykhonenko-Polishchuk[1], T. Polek[1], H. Gomonay[3,4], A. Tovstolytkin[1], A. Pogorily[1] and V. Korenivski[2] *1. Institute of Magnetism, National Academy of Sciences of Ukraine, Kyiv, Ukraine; 2. Nanostructure Physics, Royal Institute of Technology, Stockholm, Sweden; 3. National Technical University of Ukraine "KPI", Kyiv, Ukraine; 4. Institut für Physik, Johannes Gutenberg Universität Mainz, Mainz, Germany*

**FT-08**. **Magnetic-control-electric and reversal behavior of multiferroic ZnO/NiFe/ZnO multilayer films.** *P. Chi*[1], D. Wei[1], C. Yu[2] and Y. Yao[3] *1. Institute of Manufacturing Technology and Department of Mechanical Engineering, National Taipei University of Technology, Taipei, Taiwan; 2. Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan; 3. Institute of Physics, Academia Sinica, Taipei, Taiwan*

**FT-09**. **Enhanced Extraordinary Hall Effect of Co/Pd Multilayers Films Deposited on Nanodomes Substrate.** *J.C. Denardin*[1], S. Michea[1], S. Vidal[1] and S. Oyarzun[1] *1. Physics, Universidad de Santiago, Santiago, Chile*

**FT-10**. **Ferromagnetic Resonance and Interlayer Exchange Coupling in Magnetic Multilayers with Compositional Gradients.** *D. Polishchuk*[1,2], A. Kravets[1,2], Y. Tykhonenko-Polishchuk[1], A. Tovstolytkin[1] and V. Korenivski[2] *1. Institute of Magnetism, National Academy of Science of Ukraine, Kyiv, Ukraine; 2. Nanostructure Physics, Royal Institute of Technology, Stockholm, Sweden*

THURSDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session FU
## DOMAIN WALL AND DOMAIN WALL DEVICES II (Poster Session)

Matthias Benjamin Jungfleisch, Chair
Argonne National Laboratory, Argonne, IL

**FU-01**. **Impact of Ta-Mo Seedlayer Alloying on the Interfacial Dzyaloshinskii-Moriya Interaction in FeCoB/MgO Thin Films.** *D. Lau*[1], J. Pellegren[1], P. Rengasamy[1] and V.M. Sokalski[1] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA*

**FU-02**. **Control of magnetic domain wall motion on the nanoscale by using magnetic anisotropy contrast.** *D. Ravelosona*[1], L.H. Diez[1], G. Agnus[1], J. Adam[1], T. Devolder[1], S. Eimer[1], N. Vernier[1], A. Digiacomo[1], R. Mantovan[2], A. Lamperti[3], G. Tallarina[2], M. Fanciulli[2], J. Langer[4], B. Ocker[4], L. Baldi[5], M. Marianni[5], S. Manna[6] and E.E. Fullerton[7] *1. CNRS, University of Paris Sud, University of Paris Saclay, Center for Nanoscience and Nanotechnology, Orsay, France; 2. CNR-IMM MDM Laboratory, Agrate Brianza (MB), Italy; 3. Laboratorio MDM, IMM-CNR, Agrate Brianza, Italy; 4. Singulus AG, Kahl, Germany; 5. Micron Semiconductor Italia, Agrate Brianza, Italy; 6. Nanoengineering, University of California San Diego, La Jolla, CA; 7. University of California San Diego, La Jolla, CA*

**FU-03**. **Domain walls as efficient spin current sources in lateral devices.** W. Savero Torres[1], *G. Zahnd*[1], V. Pham[1], P. Laczkowski[1], A. Marty[1], L. Vila[1] and J. Attane[1] *1. Spintec, CEA Grenoble, Grenoble, France*

**FU-04**. **Filamentary Ferromagnetic Domain Structure Imaged in Metamagnetic FeRh.** *R.C. Temple*[1], J. Massey[1], T. Moore[1] and C.H. Marrows[1] *1. School of Physics and Astronomy, University of Leeds, Leeds, United Kingdom*

**FU-05**. **Stochasticity of Domain-Wall Speed Driven by Current.** *Y. Nam*[1], M. Park[1], D. Kim[1], Y. Park[1,2], J. Kim[1], B. Min[2] and S. Choe[1] *1. Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea; 2. Center for Spintronics, Korea Institute of Science and Technology (KIST), Seoul, The Republic of Korea*

**FU-06**. **Micromagnetic Simulation of Domain Wall Propagation Along Meandering Magnetic Strip With Spatially Modulated Material Parameters.** *Z. Zhang*[1], T. Tanaka[1] and K. Matsuyama[1] *1. Faculty of Information Science and Electrical Engineering, Kyushu University, Fukuoka, Japan*

**FU-07**. **Enhancement of Spin Orbit Torques in a Tb-Co Alloy Magnetic Wire by Controlling its Tb Composition.** *Y. Kurokawa*[1], A. Shibata[1] and A. Hiroyuki[1] *1. Information Storage Materials Laboratory, Toyota Technological Institute, Nagoya, Japan*

**FU-08**. **Intrinsic asymmetry in chiral domain-walls due to the Dzyaloshinskii-Moriya interaction.** *D. Kim*[1], D. Kim[1] and S. Choe[1] *1. Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea*

**FU-09**. **Tuning magnetodynamic properties in NiFe film with localized diffusion for domain wall devices.** *T. Jin*[1], M. Ranjbar[1], W. Law[1], W. Lew[1] and S.N. Piramanayagam[1] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore*

**FU-10**. **Tailoring the Domain Wall Pinning Potential in CoFeB/MgO Films with Perpendicular Magnetic Anisotropy.** *B. Sarma*[1,2], Y. Liu[3], X. Zhang[3], N. Vernier[3], M. Voto[4], A. Magni[5], S. Nasseri[1,2], L. Lopez-Diaz[4], J. Langer[6], B. Ocker[6], G. Durin[5,1], L.H. Diez[3] and D. Ravelosona[3] *1. ISI Foundation, Turin, Italy; 2. Department of Applied Science and Technology, Politecnico di Torino, Corso Duca Degli Abruzzi 24, 10129, Turin, Italy; 3. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, C2N – Orsay, 91405, Orsay cedex, France; 4. Departamento Fisica Aplicada, Universidad de Salamanca, plaza de los Caidos s/n E-38008, Salamanca, Spain; 5. Istituto Nazionale di Ricerca Metrologica, Torino, Italy; 6. Singulus Technologies AG, Kahl am Main 63796, Germany*

**FU-11**. **Stress Driven Domain Wall Motion in FeCo Nanowires.** *S. Bhatti*[1,2], T. Ikeda[2], S.N. Piramanayagam[1] and X. Liu[2] *1. School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 2. Department of Electrical and Computer Engineering, Shinshu University, Nagano, Japan*

**FU-12**. **Nanometric alternating magnetic field generator.** A. Espejo[1], *F.S. Tejo*[1], N.S. Vidal[1] and J. Escrig[1] *1. Departamento de Física, Universidad de Santiago Chile, Santiago, Chile*

**FU-13**. **Electrical detection of magnetic domain walls by inverse and direct spin Hall effect.** *V. Pham*[1,2], L. Vila[1,2], G. Zahnd[1,2], A. Marty[1,2], W. Savero-Torres[1], P. Noël[1,2], F. Rortais[1,2], M. Jamet[1,2], C. Vergnaud[1,2] and J. Attane[1,2] *1. SPINTEC, INAC, CEA-Grenoble, Grenoble, France; 2. Université Grenoble Alpes, Grenoble, France*

**FU-14**. **Current-Induced Domain Wall Motion of Pt/CoNi/Ta/FeCoB/MgO Exchange Coupled Nanowire.** *M. Furuta*[1], V. Sundar[1], Y. Liu[2] and J. Zhu[1,3] *1. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA; 2. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA; 3. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA*

**FU-15**. **Thermal conductivity of magnetic nanowire with controlled domain walls.** H. Huang[1], *C. Li*[1] and Z. Wei[1] *1. Institute of Nanoengineering and Microsystems, National Tsing Hua University, Hsinchu, Taiwan*

## Session FV

# MICROWAVE AND MAGNETOCALORIC MATERIALS (Poster Session)

Zbigniew Celinski, Co-Chair
UCCS, Colorado Springs, CO
Radhika Barua, Co-Chair
Northeastern University, Quincy, MA

**FV-01**. **Design and evaluation of noise suppression sheet for GHz band utilizing surface magneto-elastic effect.** *T. Igarashi*[1], K. Kondo[1] and S. Yoshida[1] *1. NEC Tokin Corporation, Sendai, Japan*

**FV-02**. **Magnetic and mechanical properties of iron-based $\alpha$-$Fe_2O_3$/nano-sized MgO-coated composites.** *L. Xiao*[1], M. Li[1] and W. Cheng[2] *1. Xi'an University of Science and Technology, Xi'an, China; 2. Department of Basic Courses, Mechanics Research Center, Xi'an University of Science and Technology, Xi'an, China*

**FV-03**. **Synthesis of layer structured $Fe_3O_4$ nanodisk and microstructures dependent microwave absorption property.** *N. Song*[1], S. Geng[3], J. Zhou[3], H. Yang[2] and Z. Cheng[3] *1. Beijing University of Chemical Technology, Beijing, China; 2. Institute of Physics, Beijing, China; 3. Chinese Academy of Sciences, Beijing, China*

**FV-04**. **Hard/soft ferrite-based $CoFe_2O_4$/$NiFe_2O_4$ nanocapsules with enhanced exchange-coupling interaction and microwave absorption.** C. Feng[1] and *S. Or*[1] *1. Department of Electrical Engineering, The Hong Kong Polytechnic University, Kowloon, Hong Kong*

**FV-05**. **Non-Spherical Magnetic Particle Orientation Inside Magnetic Composites in Thermoforming.** *K. Miura*[1], H. Okubo[1] and H. Osada[1] *1. Faculty of Science and Engineering, Iwate University, Morioka, Japan*

**FV-06**. **Band-Notched UltrawideBand (UWB) Antenna Loaded with Ferrite.** H. Wang[1], W. Zong[1], N.X. Sun[2], H. Lin[2] and *S. Li*[1,3] *1. Qingdao University, Qingdao, China; 2. Northeastern University, Boston, MA; 3. National Laboratory of Solid State Microstructures, Nanjing Unversity, Nanjing, China*

**FV-07**. **Synthesis and characterization of Yttrium Iron Garnet (YIG) Nanoparticles - Microwave Material.** V. Sharma[1], J. Saha[2], S. Patnaik[2] and *B.K. Kuanr*[1] *1. Special Centre for Nanoscience, Jawaharlal Nehru University, New Delhi, India; 2. School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India*

**FV-08**. **Enhanced microwave absorbing characteristics of flake-shaped ferritic stainless steel/reduced graphene oxide/epoxy composites.** *R. Yang*[1], C. Chen[2], W. Liang[1], L. Ho[1] and H. Liu[3] *1. Aerospace and Systems Engineering, Feng Chia University, Taichung, Taiwan; 2. Ph.D. Program of Mechanical and Aeronautical Engineering, Feng Chia University, Taichung, Taiwan; 3. Department of Mechanical and Computer-Aided Engineering, Feng Chia University, Taichung, Taiwan*

**FV-09**. **Study on magnetocaloric effect investigated by crystallographic and magnetic properties of $Mn_{1-x}{}^{57}Fe_xAs$ (x = 0.001, 0.003, 0.005).** *J. Lim*[1], H. Cho[1] and C. Kim[1] *1. Kookmin University, Seoul, The Republic of Korea*

**FV-10**. **Large rotating magnetocaloric effect in $ErAlO_3$ single crystal.** *X. Zhang*[1], Y. Wu[1,2], Y. Ma[1,2], Q. Dong[2], Y. Ke[1] and Z. Cheng[1] *1. Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. Capital Normal University, Center for Condensed Matter & Beijing Key Laboratory of Metamaterials and Devices, Department of Physics, Beiiing, China*

**FV-11**. **Metamagnetism and Magnetocaloric effect in dielectric oxides $R_2Cu_2O_5$ (R = Y and Er).** S. Ghorai[1], M. Sharannia[1], *R. Nirmala*[1], A.K. Nigam[2], S. Quezado[3] and S.K. Malik[3] *1. Physics, Indian Institute of Technology Madras, Chennai, India; 2. DCMP&MS, Tata Institute of Fundamental Research, Mumbai, India; 3. Departamento de Fsica Teorica e Experimental, Universidade Federal do Rio Grande do Norte, Natal, Brazil*

**FV-12**. **Magnetic Structures and "lattice-spin-charge" correlation in antiperovskite structured $Mn_3XN(C)$ compounds.** *C. Wang*[1], Y. Sun[1], L. Wang[1], K. Shi[1], S. Deng[1] and Q. Huang[2] *1. Dept. of Physics, Beihang University, Beijing, China; 2. NIST Center for Nuetron Research, Gaithersburg, MD*

THURSDAY AFTERNOON 2:30 — GRAND BALLROOM

## Session FW
# POWER MACHINES II
# (Poster Session)

Gino Hrkac, Chair
University of Exeter, Exeter, United Kingdom

**FW-01**. **Research on a New Magnetic-Field-Modulated Brushless Double-Rotor Machine with Sinusoidal-Permeance Modulating Ring.** P. Zheng[1], *J. Liu*[1], J. Bai[2], Z. Song[1] and B. Zhao[1] *1. Department of Electrical Engineering, Harbin Institute of Technology, Harbin, China; 2. Harbin Institute of Technology, Harbin, China*

**FW-02**. **Design and Performances Analysis of Less-Rare-Earth Interior Permagent Magnet Synchronous Machines Used for Electric Vehicles.** P. Zheng[1], *W. Wang*[1], J. Bai[2], L. Cheng[2] and J. Liu[3] *1. Institute of Electromagnetic and Electronic Technology, Harbin Institute of Technology, Harbin, China; 2. Harbin Institute of Technology, Harbin, China; 3. Electrical Engineering, Harbin Insititute of Technology, Harbin, China*

**FW-03**. **Performance Analysis of a New Radial-Axial Flux Machine with SMC Cores and Ferrite Magnets.** *C. Liu*[1], Y. Wang[1], J. Zhu[2], Y. Guo[2] and G. Lei[2] *1. College of Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. University of Technology, Sydney, Sydney, NSW, Australia*

**FW-04**. **Optimization and Demagnetization Analysis of Combined-Pole V-Shape Interior Permanent-Magnet Synchronous Machine.** P. Zheng[1], *C. Zhou*[1] and J. Liu[1] *1. Electrical Engineering, Harbin Institute of Technology, Harbin, China*

**FW-05**. **Design of Levitation and Guidance Control for Semi-high-speed Maglev train with Electromagnetic and Dynamic Coupling.** C. Ha[1], *M. Kim*[2], J. Jeong[3], C. Kim[1] and J. Lim[1] *1. Magnetic Levitation and Linear Drive, Korea Institute of Machinery & Materials, Daejeon, The Republic of Korea; 2. Mechatronics Engineering, Chungnam National University, Daejeon, The Republic of Korea; 3. Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea*

**FW-06**. **Design and Analysis of a Novel Cambered 2-DOF PM In-wheel Motor.** F. Chai[1], *L. Gan*[1], Y. Pei[1] and S. Cheng[1] *1. School of Electrical Engineering and Autumation, Harbin Institute of Technology, Harbin, China*

**FW-07**. **Calculation of Electromagnetic Force of EMS Maglev Vehicle in Vertical Levitation.** *X. Li*[1,2], T. Chen[1], S. Cheng[1] and J. Tang[1] *1. Central South University, Changsha, China; 2. University of California, Berkeley, CA*

**FW-08**. **Quantitative Comparison of Doubly-Salient PM Motor with Interior PM Motor for Electric Vehicle Applications.** *J. Wang*[1], J. Li[2], Z. Dai[2], Y. Li[2], M. Yao[2] and Y. Ma[2] *1. School of Electrical Engineering, Wuhan University, Wuhan, China; 2. School of Mechanical and Electronic Engineering, Wuhan University of Technology, Wuhan, China*

**FW-09**. **Demagnetization Investigation of a Partitioned Rotor Flux Switching Permanent Magnet Motor.** *D. Fan*[1], L. Quan[1] and X. Zhu[1] *1. School of electrical and information engineering, Jiangsu University, Zhenjiang, China*

**FW-10**. **A Tubular Hybrid Halbach/Axially-Magnetized Permanent-Magnet Linear Machine.** *Y. Sui*[1] and P. Zheng[1] *1. School of Electrical Engineering and Automation, Harbin Institute of Technology, Harbin, China*

**FW-11**. **Design and Analysis of a New Flux-intensifying Permanent Magnet Brushless Motor with Multilayer Flux Barriers Considering Magnetic Saturation.** X. Zhu[1], *S. Yang*[1], Z. Xiang[1], D. Fan[1] and W. Wu[1] *1. School of electrical and information engineering, Jiangsu University, Zhen Jiang, China*

**FW-12**. **Analytical Model for Loaded Magnetic Field and Electromagnetic Power of Ultra-high Speed PMSMs.** *W. Cheng*[1], L. Huang[2], M. Li[1], L. Xiao[1], H. Lin[3], Y. Sun[3] and L. Yu[3] *1. Department of Basic Courses, Mechanics Research Center, Xi'an University of Science and Technology, Xi'an, China; 2. Suzhou SLAC Precision Equipment Co., Ltd, Suzhou, China; 3. State Key Laboratory for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an, China*

**FW-13**. **Transient Line Starting Analysis of the Ultra-high Speed PMSM.** *W. Cheng*[1], W. Li[1], L. Xiao[1], M. Li[1], Y. Tian[3], Y. Sun[2] and L. Yu[2] *1. Department of Basic Courses, Mechanics Research Center, Xi'an University of Science and Technology, Xi'an, China; 2. State Key Laboratory for Strength and Vibration of Mechanical Structures, Xi'an Jiaotong University, Xi'an, China; 3. Institute of Engineering Thermophysics, Chinese Academy of Science, Beijing, China*

**FW-14**. **Asymmetric double-sided linear actuator with suppressed thrust ripple for syringe pump system.** *W. Li*[1], K. Chau[1] and T. Ching[2] *1. The University of Hong Kong, Hong Kong, Hong Kong; 2. University of Macau, Macao, China*

**FW-15**. **Torsional Stiffness Characteristics of Electric Machine Connected with Magnetic Couplings Based on Magnetic Torque Analysis.** *H. Shin*[1], S. Cho[1], K. Jung[1] and J. Choi[1] *1. Electrical engineering, Chungnam National University, Daejeon, The Republic of Korea*

FRIDAY
MORNING
8:30

MARDI GRAS A-E

## Session GA
# SYMPOSIUM: ULTRALOW DAMPING
Gilles Gaudin, Chair
SPINTEC (CNRS/CEA), Grenoble, France

**8:30**

**GA-01**. **$Co_2MnSi$ Half-Metal Magnetic Character Studied by Spin-Resolved PhotoEmission Spectroscopy and FerroMagnetic Resonance.** ***(Invited)*** *S. Andrieu*[1], A. Neggache[1], C. Guillemard[1], T. Hauet[1], S. Petit-Watelot[1], T. Devolder[2], A. Hallal[3], M. Chshiev[3], A.M. Bataille[4], P. Le Fevre[5] and F. Bertran[5] *1. Institut Jean Lamour (CNRS/Université de Lorraine), Vandoeuvre Les Nancy, France; 2. IEF, Orsay, France; 3. UMR 8191 CEA/CNRS/UJF, SPINTEC, Grenoble, France; 4. IRAMIS/LLB, CEA, Gif sur Yvette, France; 5. SOLEIL synchrotron, Saint Aubin, France*

**9:06**

**GA-02**. **Wavenumber-dependent Gilbert damping in metallic ferromagnets.** ***(Invited)*** *W. Bailey*[1] *1. Materials Science and Engineering, Department of Applied Physics and Applied Mathematics, Columbia Univeristy, New York, NY*

9:42

**GA-03**. **Magnetic Damping: Domain Wall Dynamics Versus Local Ferromagnetic Resonance.** ***(Invited)*** T. Weindler[1], *J. Chauleau*[1], H.G. Bauer[1], R. Islinger[1], B. Boehm[1] and C. Back[1] *1. Universität Regensburg, Regensburg, Germany*

10:18

**GA-04**. **New insights into achieving ultra-low magnetic damping in metallic and half-metallic materials.** ***(Invited)*** *J. Shaw*[1] *1. NIST, Boulder, CO*

10:54

**GA-05**. **Chiral damping of magnetic domain walls.** ***(Invited)*** *I. Miron*[1] *1. SPINTEC, CEA-INAC/CNRS/Univ. Grenoble Alpes, Grenoble, France*

FRIDAY MORNING 8:30 | MARDI GRAS F-H

## Session GB
# SPIN SEEBECK AND RELATED EFFECTS
Yunlong Jin, Chair
University of Nebraska, Lincoln, NE

8:30

**GB-01**. **Wavelength Characteristics of the Photo-Spin-Voltaic Effect.** *D. Ellsworth*[1], H. Chang[1], D. Qu[2], A.A. Jara[3], R. Wu[3], I. Krivorotov[3], C. Chien[2] and M. Wu[1] *1. Physics, Colorado State University, Fort Collins, CO; 2. Physics and Astronomy, Johns Hopkins University, Baltimore, MD; 3. Physics and Astronomy, University of California, Irvine, Irvine, CA*

8:42

**GB-02**. **Observation of Spin Seebeck Effect in nanometer thick YIG/Pt stripe.** *M. Collet*[1], P. Bortolotti[1], M. Muñoz[2], V. Cros[1] and A. Anane[1] *1. Unité Mixte de Physique CNRS/Thales and Université Paris Sud, Palaiseau, France; 2. IMM-Instituto de Microelectronica de Madrid, Madrid, Spain*

8:54

**GB-03**. **Thermal Imaging of Spin Peltier Effect.** *S. Daimon*[1,2], R. Iguchi[1], T. Hioki[1], E. Saitoh[1,3] and K. Uchida[1,4] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. WPI Advanced Institute for Materials Research, Tohoku University, Sendai, Japan; 3. ERATO, Spin Quantum Rectification Project, Japan Science and Technology Agency, Sendai, Japan; 4. PRESTO, Japan Science and Technology Agency, Sendai, Japan*

9:06

**GB-04**. **Propagating Spin Wave Spectroscopy for Spin-orbitronics.** *O. Gladii*[1], M. Collet[2], K. Garcia-Hernandez[2], C. Cheng[2], S. Xavier[4], P. Bortolotti[2], V. Cros[2], J. Kim[3], A. Anane[2], Y. Henry[1] and M. Bailleul[1] *1. Institut de physique et de chimie des materiaux de Strasbourg, Strasbourg, France; 2. Unité Mixte de Physique CNRS/Thales and Université Paris Sud, Palaiseau, France; 3. Centre for Nanoscience and Nanotechnology (C2N), CNRS, Univ. Paris-Sud, Universite Paris-Saclay, Palaiseau, France; 4. Thales Research and Technology, Palaiseau, France*

9:18

**GB-05**. **Spin Seebeck effect in compensated ferrimagnets across the compensation point.** *J. Cramer*[1,2], S. Geprägs[3], A. Kehlberger[1], G. Jakob[1], S.T. Goennenwein[3] and M. Kläui[1,2] *1. Institute of Physics, Johannes Gutenberg-Universität Mainz, Mainz, Germany; 2. Graduate School of Excellence Materials Science in Mainz, Mainz, Germany; 3. Walther-Meißner-Institut, Bayerische Akademie der Wissenschaften, Garching, Germany*

9:30

**GB-06**. **Correlation of magnetic anisotropy and switching behavior of $Y_3Fe_5O_{12}$ with longitudinal spin Seebeck effect.** V. Kalappattil[1], *R. Das*[1], M. Phan[1] and H. Srikanth[1] *1. Department of Physics, University of South Florida, Tampa, FL*

9:42

**GB-07**. **Longitudinal spin Seebeck effect contribution in transverse spin Seebeck effect experiments in Pt/YIG and Pt/NFO.** *D. Meier*[1], D. Reinhardt[1], M. van Straaten[1], C. Klewe[3], M. Althammer[2], M. Schreier[2], S.T. Goennenwein[2], A. Gupta[4], M. Schmid[5], C. Back[5], J. Schmalhorst[1], T. Kuschel[6] and G. Reiss[1] *1. Department of Physics, Bielefeld University, Bielefeld, Germany; 2. Bayerische Akademie der Wissenschaften, Walther-Meissner-Institut, Garching, Germany; 3. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 4. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, AL; 5. Department of Physics, University of Regensburg, Regensburg, Germany; 6. Zernike Institue for Advanced Materials, University of Groningen, Groningen, Netherlands*

9:54

**GB-08**. **Observation of a phonon anomaly in the spin Seebeck effect.** *T. Kikkawa*[1], K. Shen[2], B. Flebus[3], R. Duine[3,4], K. Uchida[5,6], Z. Qiu[7,8], G.E. Bauer[1,2] and E. Saitoh[1,8] *1. Institute for Materials Research and WPI-AIMR, Tohoku University, Sendai, Japan; 2. Kavli Institute of NanoScience, Delft University of Technology, Delft, Netherlands; 3. Institute for Theoretical Physics and Center for Extreme Matter and Emergent Phenomena, Utrecht University, Utrecht, Netherlands; 4. Department of Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands; 5. Institute for Materials Research, Tohoku University, Sendai, Japan; 6. PRESTO, Japan Science and Technology Agency, Saitama, Japan; 7. WPI-AIMR, Tohoku University, Sendai, Japan; 8. Spin Quantum Rectification Project, ERATO, Japan Science and Technology Agency, Sendai, Japan*

**10:06**

**GB-09. Quantitative evaluation of the longitudinal spin Seebeck effect.** *A. Sola*[1], P. Bougiatioti[2], D. Meier[2], M. Kuepferling[1], V. Basso[1], M. Pasquale[1] and G. Reiss[2] *1. INRIM, Torino, Italy; 2. Bielefeld University, Bielefeld, Germany*

**10:18**

**GB-10. Study of spin thermoelectric generation in $Fe_3O_4$/Pt-based heterostructures.** *R. Ramos*[1,2], T. Niizeki[1], A. Anadón[5,6], I. Lucas[5,6], M.H. Aguirre[5,7], K. Uchida[3,4], L. Morellón[5,6], P.A. Algarabel[6,8], M. Ibarra[5,6] and E. Saitoh[3,9] *1. WPI-AIMR, Tohoku University, Sendai, Japan; 2. Spin Quantum Rectification Project, ERATO, Japan Science and Technology Agency, Sendai 980-8577, Japan; 3. Institute for Materials Research and Center for Spintronics Research Network, Tohoku University, Sendai 980-8577, Japan; 4. PRESTO, Japan Science and Technology Agency, Saitama 332-0012, Japan; 5. Instituto de Nanociencia de Aragón, Universidad de Zaragoza, Zaragoza 50018, Spain; 6. Departamento de Física de la Materia Condensada, Universidad de Zaragoza, Zaragoza 50009, Spain; 7. Laboratorio de Microscopias Avanzadas, Universidad de Zaragoza, Zaragoza 50018, Spain; 8. Instituto de Ciencia de Materiales de Aragón-CSIC, Universidad de Zaragoza, Zaragoza 50009, Spain; 9. Adavanced Science Research Center, Japan Atomic Energy Agency, Tokai 319-1195, Japan*

**10:30**

**GB-11. Enhanced Magnetic Properties and Spin-Seebeck Effect in Epitaxial Nickel Ferrite Thin Films Grown on Lattice-Matched Substrates.** A.V. Singh[1], *A. Rastogi*[1], B. Khodadadi[1,2], J. Beik Mohammadi[1], S. Keshavarz[1,2], T. Mewes[1], D. Singh Negi[3], R. Dutta[3], Z. Galazka[4], R. Uecker[4] and A. Gupta[1] *1. Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL; 2. Physics and Astronomy, The University of Alabama, Tuscaloosa, AL; 3. International Centre for Materials Science, Chemistry and Physics of Materials Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India; 4. Leibniz Institute for Crystal Growth, Max-Born-Str. 2, 12489, Germany*

**10:42**

**GB-12. Breaking of Galilean invariance in the hydrodynamic formulation of ferromagnetic thin films.** *E. Iacocca*[1,2], T. Silva[3] and M. Hoefer[1] *1. Applied Mathematics, University of Colorado, Boulder, Boulder, CO; 2. Physics, Chalmers University of Technology, Gothenburg, Sweden; 3. National Institute of Standards and Technology, Boulder, CO*

**10:54**

**GB-13. Noncollinear Magnetization Between Surface And Bulk $Y_3Fe_5O_{12}$.** *P. Wu*[1] and S. Huang[1] *1. Physcis, National Taiwan University, Taipei, Taiwan*

**11:06**

**GB-14. Proximity Induced Ferromagnetism in Pt Using Magnetic Insulator $CoFe_2O_4$.** *I.V. Pinchuk*[1], W. Amamou[2], A. Goad[3] and R. Kawakami[1] *1. Physics, The Ohio State University, Columbus, OH; 2. Physics and Astronomy, UC Riverside, Riverside, CA; 3. Baltimore University, Baltimore, MD*

**11:18**

**GB-15**. **Magnon scattering dominance in $MoTe_2$ crystals at low temperatures.** *D. Suri*[1], S.P. Dash[2] and R.S. Patel[1] *1. Department of Physics, BITS Pilani - K K Birla Goa Campus, Zuarinagar, India; 2. Microtechnology and Nanoscience, Chalmers University of Technology, Gothenburg, Sweden*

FRIDAY MORNING 8:30 — LA GALERIES 1-2

## Session GC

# MAGNETIZATION DYNAMICS IV: SPIN TORQUE AND INTERFACIAL EFFECTS

Giovanni Finocchio, Chair
University of Messina, Messina, Italy

**8:30**

**GC-01**. **Spin-orbit torque induced magnetization dynamics in YIG/Pt bilayers. *(Invited)*** *G. de Loubens*[1], V. Naletov[1,4], O. Klein[5], P. Bortolotti[2], V. Cros[2], A. Anane[2], J. Ben Youssef[6], M. Muñoz[7], V.E. Demidov[3] and S. Demokritov[3] *1. Service de Physique de l'Etat Condensé, CEA Saclay, Gif-sur-Yvette, France; 2. CNRS / THALES and Univ. Paris-XI, Plaiseau, France; 3. Institute for Applied Physics, University of Muenster, Muenster, Germany; 4. Institute of Physics, Kazan Federal University, Kazan, Russian Federation; 5. SPINTEC, CEA/CNRS and Univ. Grenoble Alpes, Grenoble, France; 6. LMB, Université de Bretagne Occidentale, Brest, France; 7. CNM, CSIC, Instituto de Microelectrónica de Madrid, Madrid, Spain*

**9:06**

**GC-02**. **Effect of nonlinear damping on spin torque driven auto-oscillatory dynamics.** *J. Zhang*[1], Y. Chen[2], A. Smith[1] and I. Krivorotov[2] *1. Physics Department, University of California, Irvine, CA; 2. Physics and Astronomy, University of California, Irvine, CA*

**9:18**

**GC-03**. **Chaotic magnetization dynamics excited by RF spin transfer torque in elliptical nanodots.** *E.A. Montoya*[1], S. Perna[3], M. d'Aquino[2], C. Serpico[3] and I. Krivorotov[1] *1. Physics and Astronomy, University of California, Irvine, Irvine, CA; 2. Dipartimento di Ingegneria, Università degli Studi di Napoli "Parthenope", Napoli, Italy; 3. DIETI, University of Naples Federico II, Naples, Italy*

**9:30**

**GC-04**. **Magnetization dynamics under a strong spin-orbit torque in W/FeCoB/MgO layers.** *T. Moriyama*[1], K. Kim[1], S.C. Baek[2], B. Park[2], S. Lee[3], K. Lee[3] and T. Ono[1] *1. Kyoto University, Uji, Japan; 2. KAIST, Daejeon, The Republic of Korea; 3. Korea University, Seoul, The Republic of Korea*

**9:42**

**GC-05**. **Probing the mechanism underlying NV diamond-based detection of ferromagnetic resonance excited at frequencies far from the NV resonance.** *V.P. Bhallamudi*[1], M. Page[1], F. Guo[2], C.M. Purser[1], J.G. Schulze[1], T. Nakatani[3], C.S. Wolfe[1], J.R. Childress[3], G.D. Fuchs[2] and P. Hammel[1] *1. Department of Physics, The Ohio State University, Columbus, OH; 2. School of Applied and Engineering Physics, Cornell University, Ithaca, NY; 3. San Jose Research Center, HGST, a Western Digital company, San Jose, CA*

**9:54**

**GC-06**. **Interfacial Dzyaloshinskii-Moriya interaction in Pt/CoFeB films.** *S. Tacchi*[1], R. Troncoso[2], M. Ahlberg[3], G. Gubbiotti[1], M. Madami[5], J. Akerman[3,4] and P. Landeros[2] *1. CNR-Istituto Officina dei Materiali, Perugia, Italy; 2. Departamento de Física, Universidad Técnica Federico Santa María, Valparaíso, Chile; 3. Department of Physics, University of Gothenburg, Gothenburg, Sweden; 4. Materials and Nano Physics, Royal Institute of Technology, Stokholm-Kista, Sweden; 5. Dipartimento di Fisica e Geologia, Università di Perugia, Perugia, Italy*

**10:06**

**GC-07**. **Phenomenological and Microscopic Theory of Chiral Damping.** A. Manchon[1], *C.A. Akosa*[2], I. Miron[4] and G. Gaudin[3] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 2. Material Science and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 3. SPINTEC (CNRS/CEA) URA 2512, Grenoble, France; 4. CNRS INAC-SPINTEC, Grenoble, France*

**10:18**

**GC-08**. **Spin Pumping Damping and Magnetic Proximity Effect in Pd and Pt Spin-sink Layers.** *M. Caminale*[1,2], A. Ghosh[1], S. Auffret[1], U. Ebels[1], K.J. Ollefs[5], F. Wilhelm[4], A. Rogalev[4] and W. Bailey[3,2] *1. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France; 2. Fondation Nanosciences, Grenoble, France; 3. Applied Physics, Columbia Univeristy, New York, NY; 4. ESRF, Grenoble, France; 5. Universität Duisburg-Essen, Duisburg, Germany*

**10:30**

**GC-09**. **Tuning the Phase-Locking of Spin-Torque Nano-Oscillators Through Their Mutual Magneto-Static Interaction.** *F. Abreu Araujo*[1] and J. Grollier[1] *1. Unité Mixte de Physique, CNRS/Thales, Paris, France*

**10:42**

**GC-10**. **Numerical study of the two-mode generation in nanocontact spin torque oscillators.** *O. Heinonen*[1,2], S. Zhang[3] and E. Iacocca[4,5] *1. Argonne National Laboratory, Lemont, IL; 2. Northwestern-Argonne Institute of Science and Engineering, Evanston, IL; 3. Physics and Astronomy, University of Missouri, Columbia, MO; 4. Applied Mathematics, University of Colorado at Boulder, Boulder, CO; 5. Department of Physics, Chalmers University of Technology, Gothenburg, Sweden*

10:54

**GC-11**. **Phase-locking of multiple magnetic droplets by a microwave magnetic field.** C. Wang[1], D. Xiao[1], Y. Zhou[2], J. Åkerman[3] and *Y. Liu*[1] *1. Tongji University, Shanghai, China; 2. Physics, University of Hong Kong, Hong Kong, Hong Kong; 3. Univ Gothenburg, Göteborg, Sweden*

11:06

**GC-12**. **Highly efficient magnetization switching by spin-orbit torque in magnetic multi-layers.** *P. Sethi*[1,2], S. Krishnia[1], S.H. Li[1], Y. Chen[2], S.H. Leong[2] and W. Lew[1] *1. Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 2. Data Storage Institute (A*STAR), Agency for Science, Technology and Research, Singapore, Singapore*

11:18

**GC-13**. **Interfacial spin-orbit torque in the NiFe/Pt bilayer.** *S. Li*[1,2] and T. Zhu[1] *1. State Key Lab for Magnetism, Institute of Physics, Chinese Academy of Sciences, Beijing, China; 2. College of Science, Guangdong Ocean University, Zhanjiang, China*

FRIDAY MORNING 8:30 — LA GALERIES 3

## Session GD
# LOW-DIMENSIONAL SYSTEMS, FERRITES AND GARNETS

Laurentiu Stoleriu, Co-Chair
Al. I. Cuza University, Iasi, Romania
Ivan Skorvanek, Co-Chair
Institute of Experimental Physics Slov. Acad. Sci., Kosice, Slovakia

8:30

**GD-01**. **Manifestation of Spin-Vibron Coupling in Transport Spectroscopy of Single Magnetic Molecules.** A. Kenawy[1], J. Splettstoesser[1] and *M. Misiorny*[2] *1. Department of Microtechnology and Nanoscience — MC2, Chalmers University of Technology, Göteborg, Sweden; 2. Faculty of Physics, Adam Mickiewicz University, Poznan, Poland*

8:42

**GD-02**. **Disentangling surface and bulk transport in topological insulator p-n junctions.** *D. Backes*[1], R. Mansell[1], M. Lanius[2], J. Kampmeier[2], G. Mussler[2], D. Ritchie[1], D. Gruetzmacher[2] and V. Narayan[1] *1. Department of Physics, University of Cambridge, Cambridge, United Kingdom; 2. Peter Gruenberg Institute (PGI-9), Forschungszentrum Juelich, Juelich, Germany*

**8:54**

**GD-03**. **XMCD Studies of 5d Transition Metal Complexes - Building Blocks for Molecular Magnets.** *A. Rogalev*[1], K.S. Pedersen[2,3], F. Wilhelm[1] and R. Clérac[2,3] *1. ESRF, Grenoble, France; 2. CRPP, UPR 8641, University of Bordeaux, Pessac, France; 3. ICMCB, UPR 9048, CNRS, Pessac, France*

**9:06**

**GD-04**. **Portraying entanglement between molecular qubits with four-dimensional inelastic neutron scattering.** *E. Garlatti*[1], T. Guidi[2], S. Ansbro[3], P. Santini[1], G. Amoretti[1], J. Ollivier[3], H. Mutka[3], G. Timco[4], I. Vitorica-Yrezabal[4], G. Whitehead[4,5], R. Winpenny[4] and S. Carretta[1] *1. Department of Physics and Earth Sciences, University of Parma, Parma, Italy; 2. ISIS Facility, Rutherford Appleton Laboratory, Didcot, United Kingdom; 3. Institut Laue-Langevin, Grenoble, France; 4. School of Chemistry, University of Manchester, Manchester, United Kingdom; 5. Department of Chemistry, University of Liverpool, Liverpool, United Kingdom*

**9:18**

**GD-05**. **Electro-Nuclear Atomic Clock Transitions in a Holmium Molecular Nanomagnet.** *D. Komijani*[1], M. Shiddiq[1], Y. Duan[2], A. Gaita-Arino[2], E. Coronado[2] and S. Hill[1] *1. Florida State University and NHMFL, Tallahassee, FL; 2. Instituto de Ciencia Molecular (ICMol), University of Valencia, Valencia, Spain*

**9:30**

**GD-06**. **Withdrawn**

**9:42**

**GD-07**. **Charge density wave like phase transition in doped $Na_2IrO_3$.** *K. Mehlawat*[1] and Y. Singh[1] *1. Physics, IISER Mohali, Mohali, India*

**9:54**

**GD-08**. **Magnetic and structural properties of nanometre thick sputtered Yttrium iron garnet films.** *A. Mitra*[1], O. Cespedes[1], Q.M. Ramasse[2], C. Kinane[3], S. Langridge[3] and B. Hickey[1] *1. School of Physics & Astronomy, University of Leeds, Leeds, United Kingdom; 2. superSTEM Dewsbury, Leeds, United Kingdom; 3. Rutherford Appleton Laboratory, Oxford, United Kingdom*

**10:06**

**GD-09**. **YIG Grown on $SiO_2$ Using Novel Two-Step Rapid Thermal Anneal for High Quality Phase Pure Thin Films.** *T.E. Gage*[1], P. Dulal[2], D.J. Flannigan[1] and B. Stadler[2] *1. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN; 2. Chemical Engineering & Materials Science/ Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN*

**10:18**

**GD-10. Next generation spinel ferrite thin films with low damping and large magnetostriction.** *B.A. Gray*[1,2], S. Emori[3,4], H. Jeon[1,5], K. Mahalingam[1,2], U.S. Alaan[4], M. Gray[4], E. Arenholz[6], Y. Suzuki[7], A. Jander[8], N.X. Sun[9] and B.M. Howe[10] *1. RXAN, AFRL, WPAFB, OH; 2. UES, Dayton, OH; 3. Applied Physics, Stanford University, Stanford, CA; 4. Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA; 5. Wright State University, Dayton, OH; 6. LBNL, Berkeley, CA; 7. Stanford University, Stanford, CA; 8. EECS, Oregon State University, Corvallis, OR; 9. Northeastern University, Boston, MA; 10. Materials and Manufacturing Directorate, Air Force Research Lab, Wright Patterson Air Force Base, OH*

**10:30**

**GD-11. Magnetoelastic Constants of Single-Crystal NiZnAl-Ferrite Thin Films Measured by Strain-Dependent Ferromagnetic Resonance Spectroscopy.** K. Masood[1], P. Lenox[1], B.A. Gray[2], H. Jeon[2], B.M. Howe[2], *A. Jander*[1] and P. Dhagat[1] *1. EECS, Oregon State University, Corvallis, OR; 2. Materials and Manufacturing Directorate, Air Force Research Lab, Wright Patterson Air Force Base, OH*

**10:42**

**GD-12. Ferrite-coated Fe Soft Magnetic Composites: Reduced Core Loss and Coercivity at High Applied Frequencies.** *K.J. Sunday*[1] and M. Taheri[1] *1. Materials Science and Engineering, Drexel University, Philadelphia, PA*

**10:54**

**GD-13. Anisotropy and Ferromagnetic Resonance Linewidth in Iron-deficient LiZn Ferrite.** *X. Jiang*[1], W. Wang[1], Z. Yu[1], K. Sun[1], Z. Lan[1], X. Zhang[1] and V.G. Harris[2] *1. State Key Laboratory of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; 2. Department of Electrical and Computer Engineering, Northeastern University, Boston, MA*

**11:06**

**GD-14. Structural and Magnetic Properties of Nickel Zinc-based Ferrite Thick Films Created via Tape Casting for Wide-bandwidth Conformal Antennae.** *T. Kittel*[1], G. Naderi[1] and J. Schwartz[2] *1. North Carolina State University, Raleigh, NC; 2. North Carolina State University, Raleigh, NC*

**11:18**

**GD-15. Correlations between site specific defects and damping in $Fe_3O_4$(111)/YZO thin films.** C. Love[1,2], B. James[1], V. Lazarov[1], K. Matsuzaki[3], T. Susaki[3], S.S. Dhesi[2], G. van der Laan[2] and *S.A. Cavill*[1,2] *1. Physics, University of York, York, United Kingdom; 2. Diamond Light Source, Didcot, United Kingdom; 3. Materials and Structures Laboratory, Tokyo Institute of Technology, Tokyo, Japan*

## Session GE

# SPIN TRANSPORT IN SEMICONDUCTORS AND ARTIFICIAL STRUCTURES

Saroj Dash, Chair
Chalmers University of Technology, Gothenburg, Sweden

**8:30**

**GE-01**. **Spin-Lasers: Spintronics beyond Magnetoresistance.** ***(Invited)*** *I. Zutic*[1] *1. University at Buffalo, Buffalo, NY*

**9:06**

**GE-02**. **Spin Transport at Interfaces with Spin-Orbit Coupling.** *V. Amin*[1,2] and M. Stiles[1] *1. National Institute of Standards and Technology, Gaithersburg, MD; 2. Maryland NanoCenter, University of Maryland, College Park, MD*

**9:18**

**GE-03**. **Room Temperature Spin Kondo Effect and Interdiffusion in Co/Cu Non-Local Spin Valves.** *J.D. Watts*[1], L. O'Brien[2,3], J.S. Jeong[3], K.A. Mkhoyan[3], P.A. Crowell[1] and C. Leighton[3] *1. Physics and Astronomy, University of Minnesota, Minneapolis, MN; 2. Cavendish Laboratory, University of Cambridge, Cambridge, United Kingdom; 3. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN*

**9:30**

**GE-04**. **Position Dependence of Spin Scattering in Lateral Spin Valves.** *G. Stefanou*[1], J. Batley[1], M. Rosamond[2], M. Ali[1], G. Burnell[1] and B. Hickey[1] *1. Physics and Astronomy, Univeristy of Leeds, Leeds, United Kingdom; 2. Electronic and Electrical Engineering, University of Leeds, Leeds, United Kingdom*

**9:42**

**GE-05**. **Giant Magnetoresistance in excess of 10 % in metal based lateral spin valves.** *G. Zahnd*[1], V. Pham[1], P. Laczkowski[1], W. Savero Torres[1], A. Marty[1], C. Beigne[1], L. Vila[1] and J. Attane[1] *1. Spintec, CEA Grenoble, Grenoble, France*

**9:54**

**GE-06**. **Anomalous Nernst Effects and Thermal Spin Injection in Metallic Nonlocal Spin Valves.** *A. Hojem*[1], D. Wesenberg[1] and B. Zink[1] *1. University of Denver, Denver, CO*

**10:06**

**GE-07**. **Spin Accumulation up to 10 meV in Si Non-local Devices with MgO/Fe Tunnel Contacts.** *A.M. Spiesser*[1], H. Saito[1], Y. Fujita[2], S. Yamada[2], K. Hamaya[2], S. Yuasa[1] and R. Jansen[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan; 2. Graduate School of Engineering Science, Osaka University, Osaka, Japan*

**10:18**

**GE-08**. **Pure spin currents in Ge heterostructures probed by inverse spin-Hall effect.** *F. Bottegoni*[1], C. Zucchetti[1], J. Frigerio[1], M. Bollani[2,1], A. Farina[1], M. Finazzi[1], G. Isella[1] and F. Ciccacci[1] *1. Physics, Politecnico di Milano, Milano, Italy; 2. CNR-IFN, Milano, Italy*

**10:30**

**GE-09**. **Short Spin Diffusion Length of $n^+$-Ge at Low Temperatures.** *Y. Fujita*[1], M. Yamada[1], S. Yamada[1], T. Kanashima[1], K. Sawano[2] and K. Hamaya[1] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Advanced Research Laboratories, Tokyo City University, Tokyo, Japan*

**10:42**

**GE-10**. **Spin Absorption Effect at Ferromagnetic Alloy/$n^+$-Ge Interfaces.** *M. Yamada*[1], Y. Fujita[1], S. Yamada[1], T. Kanashima[1], K. Sawano[2] and K. Hamaya[1] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Advanced Research Laboratories, Tokyo City University, Setagaya, Japan*

**10:54**

**GE-11**. **Ultrafast and Gigantic Spin Injection in Semiconductors.** *M. Battiato*[1] and K. Held[1] *1. Technical University Vienna, Vienna, Austria*

**11:06**

**GE-12**. **Spin transport in the persistent photoconductor $Al_{0.3}Ga_{0.7}As$:Si.** J. Kim[1], K. Kountouriotis[1], *T. Liu*[1], J. Lu[2], X. Yu[2], J. Zhao[2], S. von Molnar[1] and P. Xiong[1] *1. Florida State University, Tallahassee, FL; 2. Institute of Semiconductor, Beijing, China*

**11:18**

**GE-13**. **Highly Efficient Spin-Current Operation in a Cu Nano-Ring.** B.A. Murphy[1], A.J. Vick[1,2], *J. Kim*[1], M. Samiepour[2] and A. Hirohata[2] *1. Physics, University of York, York, United Kingdom; 2. Electronics, University of York, York, United Kingdom*

## Session GF

# HIGH FREQUENCY AND MICROWAVE DEVICES II

Peng Li, Chair
Colorado State Unviersity, Fort Collins, CO

**8:30**

**GF-01**. **Ultrahigh sensitivity spin-torque diode in the absence of external magnetic fields.** ***(Invited)*** *Z. Zeng*[1], B. Fang[1], M. Carpentieri[2], X. Hao[3], H. Jiang[3], J. Katine[4], I. Krivorotov[5], B. Ocker[6], J. Langer[6], K.L. Wang[7], B. Zhang[1], B. Azzerboni[8], P. Khalili[7] and G. Finocchio[8] *1. Key Laboratory of Nanodevices and Applications, Suzhou Institute of Nano-tech and Nano-bionics, CAS, Suzhou, China; 2. Department of Electrical and Information Engineering, Polytechnic of Bari, Bari, Italy; 3. Department of Physics and Astronomy, University of California LA, Los Angeles, CA; 4. HGST Inc., San Jose, CA; 5. Department of Physics and Astronomy, University of California, Irvine, Irvine, CA; 6. Singulus AG, Kahl, Germany; 7. EE, UCLA, Los Angeles, CA; 8. Electronic Engineering, Industrial Chemistry and Engineering, University of Messina, Messina, Italy*

**9:06**

**GF-02**. **Vortex Spin-torque Oscillator Stabilized by Phase Locked Loop Using Integrated Circuits.** *M. Kreissig*[1], R. Lebrun[2], F. Protze[1], N. Joram[1], K.J. Merazzo[3], J. Hem[3], L. Vila[3], R. Ferreira[4], M. Cyrille[5], F. Ellinger[1], V. Cros[2], U. Ebels[3] and P. Bortolotti[2] *1. Chair for Circuit Design and Network Theory, Technische Universität Dresden, Dresden, Germany; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 3. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France; 4. International Iberian Nanotechnology Laboratory, Braga, Portugal; 5. CEA-LETI MINATEC-CAMPUS, Univ. Grenoble Alpes, Grenoble, France*

**9:18**

**GF-03**. **Spin transfer driven resonant expulsion of a magnetic vortex core for efficient rf detector.** *S. Menshawy*[1,2], A. Jenkins[3,2], P. Bortolotti[2], V. Cros[2], J. Kermorvant[1], U. Ebels[4], M. Cyrille[4], L. Vila[4], K.J. Merazzo[4], R. Ferreira[3], P.P. Freitas[3] and J. Costa[3] *1. Thales Communications & Security, Gennevilliers, France; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 3. International Iberian Nanotechnology Laboratory, Braga, Portugal; 4. Univ. Grenoble Alpes, CEA, CNRS, SPINTEC, Grenoble, France*

**9:30**

**GF-04**. **Controlling the Spectrum of a Magneto-Acoustic Oscillator.** A. Litvinenko[1], *R. Khymyn*[2], V. Tyberkevych[2], A.N. Slavin[2] and S. Grishin[1] *1. Saratov State University, Saratov, Russian Federation; 2. Department of Physics, Oakland University, Rochester, MI*

**9:42**

**GF-05**. **Frequency Domain Simulation on Surface Acoustic Wave Driven Ferromagnetic Resonance Device.** *X. Li*[1], S. Keller[2] and C.S. Lynch[3] *1. Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA; 2. TANMS, UCLA, Los Angeles, CA; 3. Mechanical and Aerospace Engineering, UCLA, Los Angeles, CA*

**9:54**

**GF-06**. **Reconfigurable Integrated Self-Biased Ferrite Coupled Line Circulators.** *H. Lin*[1] and N.X. Sun[2,1] *1. ECE, Northeastern University, Boston, MA; 2. Northeastern University, Boston, MA*

**10:06**

**GF-07**. **Tunable RF Band-Pass Filters Based on NEMS Magnetoelectric Resonators.** *H. Lin*[1], T. Nan[1], Y. Gao[2], H. Chen[1], X. Wang[1] and N.X. Sun[2] *1. ECE, Northeastern University, Boston, MA; 2. Northeastern University, Boston, MA*

**10:18**

**GF-08**. **On-chip ferrite-core inductor with highest inductance density for the X-band.** *R. Sai*[1], N. Bhat[2], M. Yamaguchi[1] and S.A. Shivashankar[2] *1. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 2. Centre for Nano Science and Engineering, Indian Institute of Science, Bengaluru, India*

**10:30**

**GF-09**. **Detection and estimation of magnetization induced resonances in unilateral NMR sensors.** *N. Prabhu Gaunkar*[1], I. Bulu[2], M. Mina[1], Y. Song[2] and D.C. Jiles[1] *1. Department of Electrical and Computer Engineering, Iowa State University, Ames, IA; 2. NMR Fluids Research Division, Schlumberger-Doll Research, Cambridge, MA*

**10:42**

**GF-10**. **Frequency response of laser-pulse-heated anomalous Nernst effect.** *S. Yoon*[1,2], J. Liu[1] and B. McMichael[1] *1. Center for Nanoscale Science and Technology (CNST), National Institute of Standards and Technology (NIST), Gaithersburg, MD; 2. Maryland Nanocenter, University of Maryland, College Park, MD*

**10:54**

**GF-11**. **Enhanced wave absorbing properties for CoFe@C core-shell nanocomposites derived from Prussian blue nanocubes.** *X. Zeng*[1], B. Yang[1], L. Zhu[1], H. Yang[1] and R. Yu[1] *1. Beihang University, Beijing, China*

**11:06**

**GF-12**. **Absorption properties of epsilon iron oxide nanomagnets in the Terahertz region.** *M. Yoshikiyo*[1], A. Namai[1] and S. Ohkoshi[1] *1. The University of Tokyo, Tokyo, Japan*

11:18

**GF-13**. **THz-TDS measurement of millimeter wave absorption properties on gallium substituted epsilon-iron oxide.** *A. Namai*[1], M. Yoshikiyo[1] and S. Ohkoshi[1] *1. The University of Tokyo, Tokyo, Japan*

FRIDAY MORNING 8:30

STUDIO 9-10

## Session GG
# PROCESSING AND MAGNETIC HARDENING OF RARE-EARTH-TRANSITION METAL COMPOUNDS
Emma White, Chair
Ames Laboratory of USDOE, Ames, IA

8:30

**GG-01**. **Preparation of submicron-sized $Sm_2Fe_{17}N_3$ powders with high coercivity by reduction-diffusion process.** *S. Okada*[1], K. Suzuki[1], E. Node[1], K. Takagi[1], K. Ozaki[1] and Y. Enokido[2] *1. Magnetic Powder Metallurgy Research Center, National Institute of Advanced Industrial Science and Technology, Nagoya, Japan; 2. Materials Development Center, Technology HQ, TDK Corporation, Narita, Japan*

8:42

**GG-02**. **Domain wall pinning within sintered NdFeB magnets studied by Lorentz microscopy and electron holography.** *A. Sugawara*[1], T. Akashi[1], Y. Takahashi[1] and T. Tanigaki[1] *1. Center for Exploratory Research, Research and Development of Group, Hitachi Ltd., Hatoyama, Saitama, Japan*

8:54

**GG-03**. **Analysis of Magnetization Reversal Mechanism in Nd-Fe-B magnets.** *T. Yoshioka*[1] and H. Tsuchiura[1] *1. Department of Applied Physics, Tohoku University, Sendai, Japan*

9:06

**GG-04**. **Micromagnetic simulation for initial magnetization process of Nd-Fe-B hot-deformed nanocrystalline permanent magnet.** *H. Tsukahara*[1], K. Iwano[1], C. Mitsumata[3], T. Ishikawa[2] and K. Ono[1] *1. IMSS, KEK, Tsukuba, Japan; 2. High Energy Accelerator Research Organization, Tsukuba, Japan; 3. NIMS, Tsukuba, Japan*

9:18

**GG-05**. **Texture Formation Mechanism and the Constitutive Equation for Anisotropic Hot-deformed Rare-Earth Permanent Magnets.** *M. Zhu*[1] and W. Li[1] *1. Central Iron & Steel Research Institute, China., Beijing, China*

**9:30**

**GG-06**. **Controlling Microstructure of Rare Earth Permanent Magnet Materials Using High Magnetic Field.** *M. McGuire*[1], O. Rios[1], B.S. Conner[1], W.G. Carter[1], L. Zhou[2], B. Jensen[2], K. Sun[2], M. Huang[2], C.I. Nlebedim[2] and M.J. Kramer[2] *1. Oak Ridge National Laboratory, Oak Ridge, TN; 2. Ames Laboratory, Iowa State University, Ames, IA*

**9:42**

**GG-07**. **The High Squareness Sm-Co Magnet Having $Hc_b$=10.6kOe at 150°C.** *H. Machida*[1], T. Fujiwara[1], R. Kamada[2], Y. Morimoto[2] and M. Takezawa[2] *1. NEC TOKIN Corporation, Sendai, Japan; 2. Faculty of Engineering, Kyusyu Institute of Technology, Kitakyushu, Japan*

**9:54**

**GG-08**. **Additive Manufacturing of High Performance NdFeB Bonded Magnets.** *L. Li*[1], A. Tirado[1], C.I. Nlebedim[2], O. Rios[1], B. Post[1], V. Kunc[1], R. Lowden[1], E. Lara-Curzio[1], R. Fredette[3], J. Ormerod[3], T.A. Lograsso[2] and M. Paranthaman[1] *1. Oak Ridge National Laboratory, Oak Ridge, TN; 2. Ames Laboratory, Ames, IA; 3. Magnet Applications, Inc., DuBois, PA*

**10:06**

**GG-09**. **Microstructure change of anisotropic d-HDDR Nd-Fe-B powder prepared with several hydrogen disproportionation conditions.** *M. Yamazaki*[1,2], T. Horikawa[1], C. Mishima[2], M. Matsuura[1], N. Tezuka[1] and S. Sugimoto[1] *1. Department of Materials Science, Graduate School of Engineering, Tohoku University, Sendai, Japan; 2. Aichi Steel Corporation, Tokai, Japan*

**10:18**

**GG-10**. **Magnetization reversal processes of isotropic permanent magnets with various inter-grain exchange interactions.** *H. Tsukahara*[1], K. Iwano[1], C. Mitsumata[3], T. Ishikawa[4] and K. Ono[2] *1. IMSS, KEK, Tsukuba, Japan; 2. KEK, Tsukuba, Japan; 3. NIMS, Tsukuba, Japan; 4. High Energy Accelerator Research Organization, Tsukuba, Japan*

**10:30**

**GG-11**. **Study in recycling of Nd-Fe-B sintered magnet wastes.** *Y. Ming*[1], W. Liu[1] and D. Zhang[1] *1. Beijing University of Technology, Beijing, China*

## Session GH
# MAGNETIC RECORDING II
Dieter Suess, Chair
Vienna University of Technology, Vienna, Austria

**8:30**

**GH-01**. **Dependence of SNR on free layer damping constant.** *C. Kaiser*[1], Y. Zheng[1], Z. Diao[1], D. Mauri[1], Y. Sun[1], Y. Ding[1] and M. Jiang[1] *1. Western Digital, Fremont, CA*

**8:42**

**GH-02**. **Realization of high quality epitaxial current-perpendicular-to-plane giant magnetoresistive pseudo spin-valves on Si(001) wafer using NiAl buffer layer.** J. Chen[1,2], J. Liu[2], *Y. Sakuraba*[2], H. Sukegawa[2], S. Li[2] and K. Hono[2,1] *1. Pure and Applied Sciences, University of Tsukuba, Tuskuba, Japan; 2. Research Center for Magnetic and Spintronic Materials, National Institute for Material Science, Tsukuba-City, Japan*

**8:54**

**GH-03**. **Probe-based Spin Torque Transfer Device for Writing Hard Disks.** *J. Hong*[1], O. Lee[3], S. Salahuddin[1] and J. Bokor[2] *1. UC Berkeley, Berkeley, CA; 2. EECS Department, University of California, Berkeley, CA; 3. Korea Institute of Science and Technology, Seoul, The Republic of Korea*

**9:06**

**GH-04**. **Experimental Determination of Reader Resolution using PRS Patterns and Application to Media Cluster Size Measurement.** *B. Valcu*[1], X. Wu[1], G. Albuquerque[1], C. Papusoi[1] and M. Desai[1] *1. Western Digital Company, San Jose, CA*

**9:18**

**GH-05**. **Magnetization Dynamics of Resonantly Interacting Spin-Torque Oscillator and Recording Media: Readout Method Using Magnetic Resonance.** *T. Kanao*[1], H. Suto[1], K. Kudo[1], T. Nagasawa[1], M. Yamagishi[1], K. Mizushima[1] and R. Sato[1] *1. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan*

**9:30**

**GH-06**. **Large Voltage Output In Current-Perpendicular-To-Plane Magnetoresistance Pseudo Spin-Valves Using Mg-Ti-O Spacer Material.** *Y. Du*[1,2], T. Nakatani[1], Y. Sakuraba[1], T. Furubayashi[1], Y. Takahashi[1], T. Sasaki[1] and K. Hono[1,2] *1. National Institute for Materials Science, Tsukuba, Japan; 2. University of Tsukuba, Tsukuba, Japan*

**9:42**

**GH-07**. **HAMR capacity prediction and approaches to optimization.** *Y. Jiao*[1] and R.H. Victora[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN*

**9:54**

**GH-08. Surface Segregation of Pt in $L1_0$-FePt Nano-grains.** *H. Sepehri-Amin*[1], H. Iwama[3], G. Hrkac[2], T. Shima[3] and K. Hono[1] *1. National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Engineering, Mathematics and Physical Sciences, University of Exeter, Exeter, United Kingdom; 3. Faculty of Engineering, Tohoku Gakuin University, Tagajo, Japan*

**10:06**

**GH-09. MgO-C templated seed layer for $L1_0$-ordered FePt-X granular media.** *V. Bollapragada*[1,2], B. Zhu[3,2], D. Laughlin[3,2] and J. Zhu[1,2] *1. Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA; 2. Data Storage Systems Center, Carnegie Mellon University, Pittsuburgh, PA; 3. Materials Science & Engineering, Carnegie Mellon University, Pittsburgh, PA*

**10:18**

**GH-10. Structural and magnetic properties of $L1_0$ FePt/MgO, W, Pt / $L1_0$ FePt trilayers.** *G. Giannopoulos*[1], A. Kaidatzis[1], V. Psycharis[1], D. Niarchos[1], J. Garcia-Martin[2], G. Varvaro[3], A. Testa[3] and G. Barucca[4] *1. Institute of Nanoscience and Nanotechnology, NCSR Demokritos, Athens, Greece, Athens, Greece; 2. IMM-Instituto de Microelectronica de Madrid, CSIC, Tres Cantos, Spain; 3. ISM-CNR, Area della Ricerca RM1, P.B. 10-00015, Monterotondo Scalo, Roma, Italy, Rome, Italy; 4. Università Politecnica delle Marche, Dipartimento SIMAU, Via Brecce Bianche, Ancona 60131, Italy, Rome, Italy*

**10:30**

**GH-11. High Density Shingled Recording Using Bit Patterned Media and HAMR.** *A. Venugopal*[1], A. Ghoreyshi[1] and R.H. Victora[1] *1. MINT, Electrical Engineering, University of Minnesota, Minneapolis, MN*

**10:42**

**GH-12. Molecular Dynamics Simulation Study of Plasma Etching $L1_0$ FePt Recording Media in Embedded Mask Patterning Process.** *J. Zhu*[1], P. Quarterman[1] and J. Wang[2] *1. Electrical Engineering, University of Minnesota, Minneapolis, MN; 2. Electrical and Computer Engineering, School of Physics & Astronomy, Minneapolis, MN*

**10:54**

**GH-13. Effects of Island Size and Position Fluctuation on Multitrack Reading Scheme in BPMR Systems.** C. Buajong[1], *C. Warisarn*[1] and P. Supnithi[2] *1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand; 2. Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand*

**11:06**

**GH-14**. **Utilization of Multiple Read Heads for TMR Prediction and Correction in Bit-Patterned Media Recording.** *W. Busyatras*[1], C. Warisarn[1], P. Supnithi[2], Y. Okamoto[3], Y. Nakamura[3], L.M. Myint[4] and P. Kovintavewat[5] *1. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand; 2. Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand; 3. Department of Electrical and Electronic Engineering and Computer Science, Ehime University, Mutsuyama, Japan; 4. School of Information Technology, Shinawatra University, Pathumthani, Thailand; 5. Data Storage Technology Research Center, Nakhon Pathom Rajabhat University, Nakhon Pathom, Thailand*

**11:18**

**GH-15**. **Reduced Complexity of Multi-track Joint 2-D Viterbi Detectors for Bit-Patterned Media Recording Channel.** L.M. Myint[1] and *C. Warisarn*[2] *1. School of Information Technology, Shinawatra University, Pathumthani, Thailand; 2. College of Advanced Manufacturing Innovation, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand*

FRIDAY
MORNING
8:30

STUDIO 3-4

## Session GI

# INDUCTORS AND TRANSFORMERS II

Xiujuan Jiang, Chair
Pacific Northwest National Lab, Richland, WA

**8:30**

**GI-01**. **Analysis and Modeling of Leakage Current Sensor under Pulsating Direct Current.** *K. Li*[1], Y. Dai[1], Y. Wang[1], F. Niu[1], S. Huang[1] and E. Li[1] *1. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Hebei University of Technology, Tianjin, China*

**8:42**

**GI-02**. **An Easy Method for Vessel Detection and Coil Powering in All-Surface Inductive Heating Systems.** *V. Kilic*[1], E. Unal[1] and H. Demir[1,2] *1. Department of Electrical and Electronics Engineering, Department of Physics, UNAM-Institute of Materials Science and Nanotechnology, Bilkent University, Ankara, Turkey; 2. School of Electrical and Electronic Engineering, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore*

**8:54**

**GI-03**. **Inductance Optimization of Miniature Broadband Transformers with Racetrack Shaped Ferrite Cores for Ethernet Applications.** *D. Bowen*[1], C. krafft[1] and I. Mayergoyz[2] *1. Laboratory for Physical Sciences, College Park, MD; 2. Electrical and Computer Engineering, University of Maryland College Park, College Park, MD*

9:06

GI-04. **Ferroresonance Modeling and Simulations by Using Extended Inverse Jiles-Atherton Hysteresis Theory.** *M. Zou*[1] *1. School of Electrical Engineering, Chongqing University, Chongqing, China*

9:18

GI-05. **Sensor transfer error compensation method for pulsating DC leakage current.** *K. Li*[1], Y. Dai[1], F. Niu[1], Y. Wang[1], S. Huang[1] and E. Li[1] *1. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Hebei University of Technology, Tianjin, China*

9:30

GI-06. **A Novel NiZn ferrite Integrated Magnetic Solenoid Inductor with a High Quality Factor at 0.7 – 6 GHz.** *X. Wang*[1], H. Chen[1], X. Shi[2], Y. Gao[2], H. Lin[1] and N.X. Sun[3,2] *1. ECE, Northeastern University, Boston, MA; 2. Winchester Technologies LLC, Winchester, MA; 3. Northeastern University, Boston, MA*

9:42

GI-07. **Significant Tuning of Inductance Values of Highly Scaled on-chip Inductors Incorporating Co-Zr-Ta-B Films Through Electric Current Biasing.** H. Wu[1], M. Khdour[1] and *H. Yu*[1] *1. Arizona State University, Tempe, AZ*

9:54

GI-08. **An Analytical Model for Calculating the AC Resistance of Litz-Wire.** *X. Liu*[1], T. Wang[2], Y. Wang[3], I. Md. Rabiul[4], Y. Guo[5] and J. Zhu[5] *1. Ji'nan Power Supply Company, Ji'nan, China; 2. Shandong Electric Power Transmission & Transformation Engineering Company, Ji'nan, China; 3. Province-Ministry Joint Key Laboratory of Electromagnetic Field and Electrical Apparatus Reliability, Tianjin, China; 4. The University of Queensland, Brisbane, QLD, Australia; 5. University of Technology Sydney, Sydney, NSW, Australia*

10:06

GI-09. **Voltage impulse induced non-volatile control of inductance in electrically tunable magnetoelectric inductors.** *B. Peng*[1], C. Zhang[1], Y. Yan[1] and M. Liu[1] *1. Electronic Materials Research Laboratory, Key Laboratory of the Ministry of Education & International Center for Dielectric Research, Xi'an Jiaotong University, Xi'an, China*

10:18

GI-10. **Homogenization of Mixed Magnetic Material Cores.** *S. Saha*[1] and N. Fernando[1] *1. School of Engineering, RMIT University, Melbourne, VIC, Australia*

10:30

GI-11. **Eddy Current Loss Evaluation of Magnetic Powder Core Based on Electric and Magnetic Networks.** S. Konda[1], *Y. Yoshida*[2] and O. Ichinokura[1] *1. Tohoku University, Sendai, Japan; 2. Akita University, Akita, Japan*

## Session GP
# SINGLE-PHASE MULTIFERROICS AND MAGNETOELECTRICS (Poster Session)

Ralph Skomski, Co-Chair
University of Nebraska, Lincoln, NE
Arti Kashyap, Co-Chair
IIT Mandi, Himachal Pradesh, India

**GP-01**. **Growth and characterization of metal-organic frameworks[$(CH_3)_2NH_2$]$Mn(HCOO)_3$ single crystal.** S. Ji[1], Z. Zhang[1], S. Wang[1] and *P. Li*[1] *1. Department of Physics, Center for Optoelectronics Materials and Devices, Zhejiang Sci-Tech University, Hangzhou, China*

**GP-02**. **Enhanced ferromagnetism in $BiFeO_3$ powders by rapid combustion of graphite powders.** *Q. Xu*[1,2], C. Hu[1], J. Wang[2,3] and J. Du[2,3] *1. Department of Physics, Southeast University, Nanjing, China; 2. National Laboratory of Solid State Microstructures, Nanjing University, Nanjing, China; 3. Department of Physics, Nanjing University, Nanjing, China*

**GP-03**. **The Magnetic Properties of Multiferroic $BaCoF_4$.** *S. Zhou*[1], C. Dai[1], Q. Xu[1] and J. Du[2] *1. Department of Physics, Southeast University, Nanjing, China; 2. Department of Physics, Nanjing University, Nanjing, China*

**GP-04**. **The Wasp-Waisted Hysteresis Loop and Exchange Bias in Multiferroic $BaNiF_4$.** *S. Zhou*[1], J. Wang[2], Q. Xu[1] and J. Du[2] *1. Department of Physics, Southeast University, Nanjing, China; 2. Department of Physics, Nanjing University, Nanjing, China*

**GP-05**. **Strain driven ferroic properties in the mixed-phase and rhombohedral-phase $BiFeO_3$ thin films.** F. Shao[1], J. Miao[1], K. Meng[1], Y. Wu[1], X. Xu[1], J.K. Chen[1] and *Y. Jiang*[1] *1. School of Materials Science and Engineering, University of Science and Technology Beijing, Beijing, China*

**GP-06**. **Dramatic Variation of the Multiferroic Properties in Sr Doped $Ca_{1-x}Sr_xMn_7O_{12}$.** *P. Jain*[1], J. Saha[2], L.C. Gupta[3], S. Patnaik[2], A.K. Ganguli[3,4] and R. Chatterjee[1] *1. Physics, Indian Institute of Technology, New Delhi, India; 2. School of Physical Sciences, Jawaharlal Nehru University, New Delhi, India; 3. Chemistry, Indian Institute of Technology, New Delhi, India; 4. Institute of Nano Science and Technology, Habitat Centre, Mohali, India*

**GP-07**. **Studies on structural, optical and magnetic properties of multiferroic $KBiFe_2O_5$.** Z. Wang[1], M. Zhang[1], S. Lin[1], Y. Wang[1], Y. Pan[1], *W. Liu*[1] and H. Yan[1] *1. College of Material Scicence and Engineering, Beijing University of Technology, Beijing, China*

**GP-08**. **The annealing effects of multiferroic $DyMn_2O_5$ nanorods.** *Y. Tung*[1], C. Yang[1], Y. Chen[2], T. Hsu[1] and C. Kao[1] *1. Department of Physics, Chung Yuan Christian University, Chung-Li, Taiwan; 2. Academia Sinica, New Taipei, Taiwan*

**GP-09**. **Effect of size on multiferroic $SmMn_2O_5$ nanorods.** *T. Hsu*[1], C. Yang[1], C. Chu[1], T. Tsai[1], Y. Tong[1] and K. Lin[2] *1. Physics, Chung Yuan Christian University, Taoyuan City, Taiwan; 2. Department of Chem. Eng. and Mat. Sci., Yuan Ze University, Taoyuan, Taiwan*

**GP-10**. **Local bonds anomalies and dynamics in bismuth ferrite.** *J. Lin*[1], J.S. Gardner[2], C. Wang[2], G. Deng[3], C. Wu[2] and J. Lin[4] *1. National Synchrotron Radiation Research Center (NSRRC), Hsinchu, Taiwan; 2. Neutron Group, NSRRC, Hsinchu, Taiwan; 3. ANSTO, Sydney, NSW, Australia; 4. CCMS, NTU, Taipei, Taiwan*

**GP-11**. **Magnetic Properties of Sputtered and Pulsed Laser $BiFeO_3$ Thin Films Deposited Over Si Substrates.** *G.A. Gomez*[1], L. de Oliveira[2], A. Peyton-Madrigal[3], D. Souza[4], A. Mello[1], L.B. Steren[5] and J. Sinnecker[1] *1. Departamento de Físicas Experimental de Baixas Energias, Centro Brasileiro de Pesquisas Físicas, Rio de Janeiro, Brazil; 2. Federal University of Rio de Janeiro, Rio de Janeiro, Brazil; 3. Havana University, La Habana, Cuba; 4. Fluminense Federal University of Rio de Janeiro, Rio de Janeiro, Brazil; 5. Centro Atómico Constituyentes, Buenos Aires, Argentina*

**GP-12**. **Effects of Zn-Ti substitution on the magnetoelelctric coupling of $Co_2Z$ hexaferrites at room temperature.** *X. Wang*[1], K. Song[1], H. Luo[1], F. Chen[1] and R. Gong[1] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China*

**GP-13**. **Microscopic evidence of magnetic and structure phase transition in multiferroic spinel $FeV_2O_4$.** *B. Myoung*[1], J. Lim[1], T. Kouh[1] and C. Kim[1] *1. Kookmin University, Seoul, The Republic of Korea*

**GP-14**. **Multiferroicity in orthorhombic epitaxial $HoMnO_3$ thin films.** *T. Han*[1] and Y. Liu[1] *1. Department of Applied Physics, National University of Kaohsiung, Kaohsiung, Taiwan*

**GP-15**. **Ab-initio Study of Magnetoelectric ε-$Fe_2O_3$.** *I. Ahamed*[1], R. Choudhary[1], R. Skomski[2,3] and A. Kashyap[1] *1. School of Basic Sciences (Physics), Indian Institute of Technology, Mandi, Mandi, India; 2. Department of Physics and Astronomy, University of Nebraska - Lincoln, Lincoln, NE; 3. Nebraska Center for Materials and Nanoscience, University of Nebraska, Nebraska Lincoln, NE*

**GP-16**. **High-Temperature Magnetic Properties of Epsilon-$Fe_2O_3$.** M. Gich[1], J. Nogues[2,3], A. Roig[1], F. Fauth[4] and *J. Garcia-Muñoz*[1] *1. Institut de Ciència de Materials de Barcelona -CSIC, Bellaterra, Spain; 2. ICN2- Institut Catala de Nanociencia i Nanotecnologia, Bellaterra, Spain; 3. Institut Català de Recerca i Estudis Avançats (ICREA), E-08010 Barcelona, Spain; 4. ALBA Synchrotron Light Facility, 08290 Cerdanyola del Vallès, Spain*

**GP-17**. **Systematic control of magnetoelectric coupling with cobalt substitution in M-type hexaferrite thin film.** *H. Izadkhah*[1,2], S. Zare[1,2], S. Somu[3], F. Lombardi[1] and C. Vittoria[1,2] *1. Electrical and Computer Engineering Department, Northeastern University, Boston, MA; 2. Microwave Material Laboratory, Boston, MA; 3. Kostas Micro and Nano Fabrication Facility, Northeastern University, Boston, MA*

FRIDAY MORNING 9:30 — GRAND BALLROOM

## Session GQ

# ANISOTROPY EFFECTS IN THIN FILMS II (Poster Session)

Roopali Kukreja, Chair
University of California, Davis, CA

**GQ-01**. **Ferromagnetic Anisotropic Behavior in Room Temperature of Mn Doped β-$Ga_2O_3$ Epitaxial Thin Film.** D. Guo[1,2], *P. Li*[1,2] and W. Tang[2] *1. Department of Physics, Center for Optoelectronics Materials and Devices,Zhejiang Sci-Tech University, Hangzhou, China; 2. Laboratory of Optoelectronics Materials, School of Science, Beijing University of Posts and Telecommunications, Beijing 100876, China*

**GQ-02**. **Tuning the magnetism of $Ni_{80}Fe_{20}/La_{0.7}Sr_{0.3}MnO_3/SrTiO_3(001)$ thin films with low-energy Ar ion-beam bombardment on the LSMO surface.** P. Manna[1], I. Bergenti[2], C. Lin[3], P. Graziosi[2], A. Ruotolo[4], J. van Lierop[1], *K. Lin*[3] and V.A. Dediu[2] *1. Physics & Astronomy, University of Manitoba, Winnipeg, MB, Canada; 2. ISMN-CNR, Bologna, Italy; 3. Department of Materials Science and Engineering, National Chung Hsing University, Taichung, Taiwan; 4. City University of Hong Kong, Kowloon, Hong Kong*

**GQ-03**. **TEM and XMCD studies of ultrathin CoFeB amorphous films on GaAs(100).** *Y. Yan*[1], C. Lu[1], H. Tu[2], X. Lu[3], W. Liu[1], J. Wang[1], I. Will[1], B. Kuerbanjiang[4], V. Lazarov[3], J. Wu[3], J. Du[2] and Y. Xu[4] *1. Electronics, University of York, York, United Kingdom; 2. Physics, Nanjing Unversity, Nanjing, China; 3. Physics, University of York, York, United Kingdom; 4. University of York, York, United Kingdom*

**GQ-04**. **Tuning perpendicular magnetic anisotropy in CoFeB-MgO ultra-thin films using light Ion Irradiation.** *S. Manna*[1], L.H. Diez[4], B. Ocker[2], J. Langer[2], E.E. Fullerton[3] and D. Ravelosona[4] *1. Nanoengineering, University of California San Diego, La Jolla, CA; 2. Singulus AG, Kahl, Germany; 3. UC San Diego 0401, La Jolla, CA; 4. Centre de Nanosciences et de Nanotechnologies, CNRS, Univ. Paris-Sud, Université Paris-Saclay, Orsay, France*

**GQ-05**. **Tuning Perpendicular Magnetic Anisotropy At Permalloy/Cu Interfaces Through Interface Composition.** *M. Caminale*[1,2], A. Hallal[1], S. Auffret[1], U. Ebels[3], M. Chshiev[4] and W. Bailey[5,2] *1. SPINTEC, Univ. Grenoble Alpes / CEA / CNRS, Grenoble, France; 2. Fondation Nanosciences, Grenoble, France; 3. Univ. Grenoble Alpes, CEA, CNRS, SPINTEC, Daejeon, The Republic of Korea; 4. UMR 8191 CEA/CNRS/UJF, SPINTEC, Grenoble, France; 5. Applied Physics, Columbia Univeristy, New York, NY*

**GQ-06**. **Enhancement of Perpendicular Anisotropy in $BiFeO_3$/CoPt Bilayer Structure.** *Y. Wang*[1], H. An[3], T. Harumoto[1], Y. Nakamura[1], K. Nakada[4], S. Nakagawa[2] and J. Shi[1] *1. School of Materials and Chemical Engineering, Tokyo Institute of Technology, Tokyo, Japan; 2. Engineering School, Tokyo Institute of Technology, Tokyo, Japan; 3. Department of Applied Physics and Physico-Informatics, Keio University, Tokyo, Japan; 4. Technical Center, TDK Corporation, Tokyo, Japan*

**GQ-07**. **Spin interaction induced in-plane magnetic anisotropy of soft magnetic FePt layer in FePt/NiO/FePt trilayer structure.** *T. Gao*[1], T. Harumoto[1], Y. Nakamura[1] and J. Shi[1] *1. School of Materials and Chemical Technology, Tokyo Institute of Technology, Tokyo, Japan*

**GQ-08**. **High post-annealing stability in perpendicularly magnetized stacks of FeZr/CoFeB/MgO.** *D. Son*[1], J. An[2], S. Lim[1,2] and S. Lee[1] *1. Department of Materials Science and Engineering, Korea University, Seoul 02841, The Republic of Korea; 2. Department of Semiconductor System Engineering, Korea University, Seoul 02841, The Republic of Korea*

**GQ-09**. **Magnetic Properties in CoFeB/CoFeBV Hybrid Perpendicularly Magnetized Systems.** *D. Kim*[1] and E.E. Fullerton[1] *1. Center for Memory and Recording Research, University of California San Diego, San Diego, CA*

**GQ-10**. **Thickness and temperature driven spin reorientation transition analyzed by high-order energy terms in ultrathin cobalt films.** Q. Yang[1], B. Peng[1], X. Wang[2], W. Ren[1], Z. Ye[1,3], N.X. Sun[2] and *M. Liu*[1] *1. School of Electrical and Information Engineering, Xian Jiaotong University, Xian, China; 2. ECE, Northeastern University, Boston, MA; 3. Department of Chemistry and 4D LABS, Simon Fraser University, Burnaby, BC, Canada*

**GQ-11**. **The effect of annealing temperature on the magnetic anisotropy in Co ultrathin film on MgO(001) substrate.** *Y. Zhang*[1], W. He[1], X. Zhang[1] and Z. Cheng[1] *1. Chinese Academy of Sciences, Beijing, China*

**GQ-12**. **Origin of perpendicular magnetic anisotropy in epitaxial Pd/Co/Pd trilayers.** *A. Davydenko*[1], A.G. Kozlov[2], M.E. Stebliy[3], A. Ognev[2] and L. Chebotkevich[2] *1. Far Eastern Federal University, Vladivostok, Russian Federation; 2. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 3. Thin Film Technology, FEFU, Vladivostok, Russian Federation*

**GQ-13**. **Interfacial Perpendicular Magnetic Anisotropy of Oxide/CoFeB/Ta Stack with a Ferroelectric as Oxide Layer.** *W. Lin*[1], H. Yoong[1], J. Xiao[1], R. Guo[1], H. Wang[1] and J. Chen[1] *1. Materials Science and Engineering, National University of Singapore, Singapore, Singapore*

**GQ-14**. **Tunable anisotropy field and millimeter wave loss of highly oriented scandium substituted barium hexaferrite thin films for millimeter wave applications.** *D. Chen*[1,2], Y. Li[3], G. Wang[1] and H. Zhang[4] *1. College of Materials and Chemical Engineering, Hainan University, Haikou, China; 2. School of Microelectronics and Solid-State Electronics, University of Electronic Science and Technology of China, Chengdu, China; 3. State Key Lab of Electronic Thin Films and Integrated Devices, University of Electronic Science and Technology of China, Chengdu, China; 4. University of Electronic Science and Technology of China, Chengdu, China*

**GQ-15**. **Magnetic properties of composition modulated $Mn_xGa$ epitaxial thin films.** *Y. Takahashi*[1], T. Shima[1] and M. Doi[1] *1. Faculty of Engineering, Tohoku Gakuin University, Tagajo, Japan*

FRIDAY MORNING 9:30 | GRAND BALLROOM

## Session GR
# EXCHANGE BIAS I (Poster Session)
Denys Makarov, Chair
IFW Dresden, Dresden, Germany

**GR-01**. **Crystal Structure Manipulation of the Exchange Bias in an Antiferromagnet Film.** *W. Yuan*[1], T. Su[1], Q. Song[1], W. Xing[1], Y. Chen[1], T. Wang[1], Z. Zhang[2], X. Ma[2], P. Gao[2], J. Shi[3] and W. Han[1] *1. International Center for Quantum Materials, Peking University, Beijing, China; 2. Electron Microscopy Laboratory, School of Physics, Peking Universty, Beijing, China; 3. Department of Physics and Astronomy, University of California Riverside, Riverside, CA*

**GR-02**. **Exchange bias of Ir-doped $Fe_2O_3$ inserted $Cr_2O_3$/Co thin film system.** *S. Ye*[1], S. Pati[1], Y. Shiokawa[1], M. Al-Mahdawi[1], T. Nozaki[1] and M. Sahashi[1,2] *1. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 2. ImPACT Program, Japan Science and Technology Agency, Tokyo, Japan*

**GR-03**. **Anomalous Zero-Field-Cooled Magnetization and Exchange Bias in Nanostructured $(Mn,Zn,Fe)_3O_4$ Films.** *U.S. Alaan*[1,2], G. Sreenivasulu[3], K. Yu[4], P. Shafer[5], E. Arenholz[5] and Y. Suzuki[1,6] *1. Geballe Laboratory for Advanced Materials, Stanford University, Stanford, CA; 2. Department of Materials Science and Engineering, Stanford University, Stanford, CA; 3. Department of Physics, Oakland University, Rochester, MI; 4. Materials Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA; 5. Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA; 6. Department of Physics and Applied Physics, Stanford University, Stanford, CA*

**GR-04**. **Magnetic Profile of the NiFe/IrMn/Co Exchange Biased Trilayer.** *V.P. Nascimento*[1], J. Tonnerre[2,3], F. Fettar[2,3], E. Mossang[2,3], E.C. Passamani[1], H.D. Leite[1], P. Ohresser[4], A. Krohling[1] and R. Magalhães-Paniago[5] *1. Física, Universidade Federal do Espírito Santo, Vitória, Brazil; 2. Institut Néel, CNRS, Grenoble, France; 3. Université Grenoble Alpes, Grenoble, France; 4. Synchrotron SOLEIL, Paris, France; 5. Física, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil*

**GR-05**. **High blocking temperature of perpendicular exchange bias in Al-doped $Cr_2O_3$/Co exchange coupled thin film system.** *T. Nozaki*[1], Y. Shiokawa[1], S. Pati[1], S. Ye[1], M. Al-Mahdawi[1] and M. Sahashi[1,2] *1. Department of Electronic Engineering, Tohoku University, Sendai, Japan; 2. ImPACT Program, Japan Science and Technology Agency, Tokyo, Japan*

**GR-06**. **Uncompensated Magnetization in FeMn Measured with Polarized Neutron Reflectometry.** *I.V. Roshchin*[1,2], P.N. Lapa[2,3], A.G. Glavic[4,5], H. Ambaye[5], V. Lauter[5], T.M. Eggers[6], C.W. Miller[7,6] and K. Belashchenko[8] *1. Department of Materials Science and Engineering, Texas A&M University, College Station, TX; 2. Department of Physics and Astronomy, Texas A&M University, College Station, TX; 3. Material Science, Argonne National Laboratory, College Station, TX; 4. Laboratory for Neutron Scattering and Imaging, Paul Scherrer Institut, Villigen PSI, Switzerland; 5. Neutron Scattering Science Division, Oak Ridge National Laboratory, Oak Ridge, TN; 6. Department of Physics, University of South Florida, Tampa, FL; 7. Materials Science, Rochester Institute of Technology, Rochester, NY; 8. Department of Physics and Astronomy, University of Nebraska-Lincoln, Lincoln, NE*

**GR-07**. **Magnetic and transport properties of MnN/$Co_3FeN$ epitaxial bilayers.** T. Yoshida[1], H. Ando[1], T. Hajiri[1] and *H. Asano*[1] *1. Crystalline Materials Science, Nagoya University, Nagoya, Japan*

**GR-08**. **Current induced modulation of Magnetic Anisotropy in Antiferromagnetic-Ferromagnetic-Heavy Metal structure.** *C. Engel*[1], S. Goolaup[1] and W. Lew[1] *1. Nanyang Technological University, Singapore, Singapore*

**GR-09**. **Magnetic Properties and Exchange Bias in MnN/Fe Bilayers.** *R. Yanes*[1], E. Simon[2], L. Szunyogh[2] and U. Nowak[1] *1. Physics Department, University of Konstanz, Konstanz, Germany; 2. Department of Theoretical Physics, Budapest University of Technology and Economics, Budapest, Hungary*

**GR-10**. **Magnetization Reversal in Ferromagnetic Wires patterned with Antiferromagnetic Gratings.** *S. Redjai Sani*[1], F. Liu[1] and C.A. Ross[1] *1. Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

## Session GS
# EXCHANGE BIAS II (Poster Session)

Fang-Yuh Lo, Chair
National Taiwan Normal University, Taipei, Taiwan

**GS-01**. **Exchange bias in spin-glass/ferromagnet (SG/FM) bilayers.** Y. Hu[1,2], X. Li[1], X. Chi[1], W. Rui[3] and *J. Du*[3] *1. College of Sciences, Northeastern University, Shenyang, China; 2. MOE Key Laboratory for Anisotropy and Texture of Materials, Northeastern University, Shenyang, China; 3. National Laboratory of Solid State Microstructures and Department of Physics, Nanjing Unversity, Nanjing, China*

**GS-02**. **Control of Exchange Anisotropy in AFM/FM Bilayers by Piezoelectric Strains.** *H. Kim*[1] and J. Hong[1,2] *1. Emerging Materials Science, DGIST (Daegu Gyeongbuk Inst. of Sci. and Tech.), Daegu, The Republic of Korea; 2. Research Center for Emerging Materials, DGIST (Daegu Gyeongbuk Inst. of Sci. and Tech.), Daegu, The Republic of Korea*

**GS-03**. **Perpendicular Exchange Bias in IrMn/Co-Pt Multilayers.** K. Elphick[1], *G. Vallejo-Fernandez*[1], T.J. Klemmer[2], J. Thiele[2] and K. O'Grady[1] *1. University of York, York, United Kingdom; 2. Seagate Media Research, Fremont, CA*

**GS-04**. **Coercivity and Spin Freezing Effects in IrMn Based Exchange Bias Systems.** R.D. Carpenter[1], J. Gompertz[2], S.S. Hassan[1], M.W. Ormston[1], S.A. Cavill[2], *G. Vallejo-Fernandez*[2] and K. O'Grady[2] *1. Seagate Technology NI, Derry, United Kingdom; 2. University of York, York, United Kingdom*

**GS-05**. **Antiferromagnetic $Ru_2MnGe$ Heusler compound as a pinning layer for exchange bias devices.** *J. Balluff*[1], M. Meinert[1], J. Schmalhorst[1], E. Arenholz[2] and G. Reiss[1] *1. Center for Spinelectronic Materials and Devices, Bielefeld University, Bielefeld, Germany; 2. LBNL, Berkeley, CA*

**GS-06**. **Brillouin Light Scattering study of the rotatable magnetic anisotropy in exchange biased bilayers of $Ni_{81}Fe_{19}$(10nm)/$Ir_{20}Mn_{80}$.** *R. Rodriguez*[1], F. Estrada[2,3], A. Oliveira[4], O. Alves[2], A. Azevedo[2] and S.M. Rezende[2] *1. Instituto de Fisica, Pontificia Universidad Católica de Chile, Santiago, Chile; 2. Departamento de Física, Universidade Federal de Pernambuco, Recife, Brazil; 3. Biologia, Universidad Michoacana de San Nicolas de Hidalgo, Morelia, Mexico; 4. Departamento de Física, Universidade Federal de Rio Grande do Norte, Natal, Brazil*

**GS-07**. **Ferromagnetic Resonance Study Of The Anisotropic Relaxation In IrMn/CoFe Exchange Bias System.** *J. Beik Mohammadi*[1], J.M. Jones[1], B. Khodadadi[1], T. Mewes[1], C.K. Mewes[1], C. Kaiser[2] and S. Paul[1] *1. Physics/MINT, The University of Alabama, Tuscaloosa, AL; 2. Western Digital, Fremont, CA*

**GS-08**. **Magnetization reversal process of $Co_3FeN$/MnN exchange-coupled bilayers studied by magneto-optical Kerr effect.** T. Hajiri[1], T. Yoshida[1], S. Jaiswal[2], M. Filianina[2], B. Borie[2], H. Ando[1], *H. Asano*[1], H. Zabel[2] and M. Kläui[2] *1. Crystalline Materials Science, Nagoya University, Nagoya, Japan; 2. Institute of Physics, Johannes Gutenberg-Universität Mainz, Mainz, Germany*

**GS-09**. **Large exchange bias in $Co_{40}Fe_{40}B_{20}$/MnN bilayers for spintronic applications.** *D. Zhang*[1], K. Schliep[2], P. Quarterman[1], J. Liu[1], J. Chen[1] and J. Wang[1] *1. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN; 2. Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN*

**GS-10**. **Development of Exchange Bias in Bulk Nanocomposite FeMn.** *I. McDonald*[1], L.G. Marshall[1], D. Heiman[2] and L.H. Lewis[1] *1. Chemical Engineering, Northeastern University, Boston, MA; 2. Physics, Northeastern University, Boston, MA*

**GS-11**. **Modeling of GMI effect in exchange biased NiFe Ferromagnetic thin films.** *C. Garcia*[1], C.A. Ross[3] and U. Kilic[2] *1. Physics, UTFSM-Universidad Técnica Federico Santa María, Valparaiso, Chile; 2. Electrical Engineering Department, Nebraska University at Lincoln, Lincoln, NE; 3. Materials Sciece, Massachusetts Institute of Technology, Cambridge, MA*

FRIDAY MORNING 9:30 — GRAND BALLROOM

## Session GT
# MAGNONICS IV
# (Poster Session)

Sebastian Wintz, Chair
Paul Scherrer Institut, Villigen PSI, Switzerland

**GT-01**. **Design of a CMOS Integrated On-Chip Oscilloscope for Spin Wave Characterization.** *E. Egel*[1], C. Meier[1], G. Csaba[2] and S. Breitkreutz-v. Gamm[1] *1. Institute for Technical Electronics, Technische Universität München, Munich, Germany; 2. University of Notre Dame, Notre Dame, IN*

**GT-02**. **Propagation of collective spin wave in transversely magnetized bi-component nanowire array.** R. Silvani[1], *S. Tacchi*[1], M. Madami[2], G. Carlotti[5], A. Adeyeye[4] and G. Gubbiotti[3] *1. CNR-Istituto Officina dei Materiali, Perugia, Italy; 2. Dipartimento di Fisica e Geologia, Università di Perugia, Perugia, Italy; 3. IOM-CNR, Perugia, Italy; 4. Electrical & Computer Engineering, National University of Singapore, Singapore, Singapore; 5. Dipartimento di Fisica, University of Perugia, Perugia, Italy*

**GT-03**. **Standing spin wave resonant properties of spin-twist structure in exchange coupled composite films.** *X. Ya*[1], T. Tanaka[1] and K. Matsuyama[1] *1. Kyushu University, Fukuoka, Japan*

**GT-04**. **The Boltzmann Equation for Magnon Transport with Three Magnons Scattering.** *T. Liu*[1], J. Ren[1], Y. Liu[1] and J. Zhang[1] *1. School of Physics, Tongji University, Shanghai, China*

**GT-05**. **Electric Field Manipulation of Spin Wave Propagation.** *S. Wang*[1,2], X. Guan[1,2], X. Cheng[1,2], C. Lian[1,2], T. Huang[1,2] and X. Miao[1,2] *1. School of Optical and Electronic Information, Huazhong University of Science and Technology, Wuhan, China; 2. Wuhan National Laboratory for Optoelectronics, Huazhong University of Science and Technology, Wuhan, China*

**GT-06**. **Frequency- and Amplitude Modulation of Spin Wave Signals emitted from Topological Spin Textures.** *S. Wintz*[1,2], S. Finizio[1], K. Schultheiss[2], V. Liersch[2], F. Kilibarda[2], T. Warnatz[2], A.K. Suszka[1,3], P. Warnicke[1], P. Wohlhüter[1,3], A. Erbe[2], J. Lindner[2], J. Fassbender[2,4] and J. Raabe[1] *1. Paul Scherrer Institut, Villigen PSI, Switzerland; 2. Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany; 3. ETH Zürich, Zurich, Switzerland; 4. Technische Universität Dresden, Dresden, Germany*

**GT-07**. **Tunable Spin Wave Dynamics In Two-Dimensional Quasi-Magnonic Crystals.** *S. Choudhury*[1], S. Saha[1], Y. Otani[2,3] and A. Barman[1] *1. Condensed Matter Physics and Material Sciences, S N Bose National Centre For Basic Sciences, Kolkata, India; 2. ISSP, University of Tokyo, Kashiwa, Japan; 3. RIKEN-CEMS, Hirosawa, Japan*

**GT-08**. **Towards Strain-Mediated Control of Spin Waves for Logic.** *A. Barra*[1] and G. Carman[1] *1. Mechanical Engineering, University of California, Los Angeles, Los Angeles, CA*

**GT-09**. **High-efficiency control of spin-wave propagation in ultra-thin Yttrium Iron Garnet by the spin-orbit torque.** *M. Evelt*[1], V.E. Demidov[1], S. Demokritov[1], J.L. Prieto[3], M. Muñoz[5], J. Youssef[6], V. Naletov[7], G. de Loubens[4], O. Klein[8], M. Collet[2], K. Garcia-Hernandez[2], P. Bortolotti[2], V. Cros[2] and A. Anane[2] *1. University of Münster, Münster, Germany; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 3. Física Aplicada, Universidad Politécnica de Madrid, Madrid, Spain; 4. Service de Physique de l'Etat Condensé, CEA Saclay, Gif-sur-Yvette, France; 5. Instituto de Microelectrónica de Madrid, Madrid, Spain; 6. Université de Bretagne Occidentale, Brest, France; 7. Kazan Federal University, Kazan, Russian Federation; 8. INAC-SPINTEC, Grenoble, France*

**GT-10**. **Laser-pulse-induced spin-wave propagation modified by spin-orbit torques.** *D. Lee*[1], S. Lee[1], G. Go[1], S. Mizukami[2] and K. Lee[1] *1. Korea University, Seoul, The Republic of Korea; 2. WPI-AIMR, Tohoku University, Sendai, Japan*

**GT-11**. **Spin Wave and Fluctuation Effect in Monoaxial Chiral Magnet.** *Y. Masaki*[1] and R. Stamps[2] *1. The University of Tokyo, Tokyo, Japan; 2. University of Glasgow, Glasgow, United Kingdom*

**GT-12**. **Spin wave generator via oscillating vortex core in NiFe disk array.** L. Chang[1], M. Kao[1], J. Liang[2] and *S. Lee*[1] *1. Institute of Physics, Academia Sinica, Taipei, Taiwan; 2. Department of Physics, Fu Jen Catholic University, New Taipei, Taiwan*

**GT-13**. **Long-range propagation of magnetostatic surface spin waves in ordered FeRh epitaxial thin films.** *T. Usami*[1], I. Suzuki[1], M. Itoh[1] and T. Taniyama[1] *1. Laboratory for Materials and Structures, Tokyo Institute of Technology, Yokohama, Japan*

**GT-14**. **Unidirectional short-wavelength spin wave propagation using one-dimensional nanogratings.** *J. Chen*[1], H. Chang[2], C. Liu[3], T. Liu[2], T. Stückler[1], Z. He[1], W. Zhao[1], Z. Liao[3], D. Yu[3], M. Wu[2] and H. Yu[1] *1. Fert Beijing Research Institute, School of Electronic and Information Engineering, Beihang University, Beijing, China; 2. Department of Physics, Colorado State University, Fort Collins, CO; 3. State Key Laboratory for Mesoscopic Physics and Electron Microscopy Laboratory, School of Physics, Peking University, Beijing, China*

**GT-15**. **Withdrawn**

FRIDAY MORNING 9:30 — GRAND BALLROOM

## Session GU
# DMI AND SPIN-ORBIT TORQUES (Poster Session)

Felix Buettner, Chair
Massachusetts Institute of Technology, Cambridge, MA

**GU-01**. **Large enhancement of spin-orbit torques in MnGa/Ta films with inserting ferromagnetic layers.** *K. Meng*[1], J. Miao[1], X. Xu[1] and Y. Jiang[1] *1. School of Materials Science and Engineering, University of Science & Technology Beijing, Beijing, China*

**GU-02**. **Initialization-free multilevel states driven by spin-orbit torque switching.** *C. Yang*[1], K. Huang[1], D. Wang[1], M. Tsai[1], H. Lin[2] and C. Lai[1] *1. Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan; 2. Physics, National Tsing Hua University, Hsinchu, Taiwan*

**GU-03**. **Large interfacial spin-orbit torque in Fe|MgO|V tunnel junctions.** *S. Miwa*[1,2], J. Fujimoto[3], P. Risius[1], M. Goto[1,2] and Y. Suzuki[1,2] *1. Graduate School of Engineering Science, Osaka University, Toyonaka, Japan; 2. Center for Spintronics Research Network, Osaka University, Toyonaka, Japan; 3. Institute for Chemical Research, Kyoto University, Uji, Japan*

**GU-04**. **Temperature Dependence Study of Spin Orbit Torque in Cu-Au Alloy.** *Y. Wen*[1], X. Zhang[1], A. Manchon[1], J. Xiao[2], P. Li[1] and Q. Zhang[1] *1. King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; 2. University of Delaware, Newark, DE*

**GU-05**. **Effect of the interlayer exchange torque on the domain wall dynamics in perpendicularly magnetized synthetic antiferromagnetic nanowires.** *S. Krishnia*[1], P. Sethi[1], W. Gan[1], F.N. Kholid[1], I. Purnama[1], R. Maddu[1], T. Herng[2], J. Ding[2] and W. Lew[1] *1. Division of Physics and Applied Physics, School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore, Singapore; 2. Materials Science & Engineering, National University of Singapore, Singapore, Singapore*

**GU-06**. **Doppler Shift Picture of the Dzyaloshinskii-Moriya Interaction.** *T. Kikuchi*[1], T. Koretsune[1,2], R. Arita[1] and G. Tatara[1] *1. Center for Emergent Matter Science, RIKEN, Saitama, Japan; 2. JST, PRESTO, Saitama, Japan*

**GU-07**. **Enhancement of Brillouin light scattering signal for Dzyaloshinskii-Moriya Interaction with anti-reflection layer.** *J. Jung*[1], N. Kim[1], K. Park[1], H. Hwang[1], J. Kim[1] and C. You[1] *1. Department of Emerging Materials Science, Daegu Gyeongbuk Institute of Science & Technology (DGIST), Daegu, The Republic of Korea*

**GU-08**. **Pt thickness dependence of interfacial Dzyaloshinskii-Moriya interaction energy and role of Cu insertion layer at the Pt/Co and Co/$AlO_x$ interfaces.** *N. Kim*[1], J. Jung[1], J. Cho[2], D. Han[3], Y. Yin[3], J. Kim[3], H. Swagten[3], K. Lee[4], M. Jung[5] and C. You[1] *1. Emerging Materials Science, Daegu Gyeongbuk Institute of Science & Technology (DGIST), Daegu, The Republic of Korea; 2. Physics, Inha University, Incheon, The Republic of Korea; 3. Department of Applied Physics, Eindhoven University of Technology, Eindhoven, Netherlands; 4. Johannes Gutenberg University Mainz, Mainz, Germany; 5. Department of Physics, Sogang University, Seoul, The Republic of Korea*

**GU-09**. **Evaluation of the additive interfacial Dzyaloshinskii–Moriya interaction by field-driven domain-walls annihilation measurement in perpendicularly magnetized Pt/CoFeSiB/Ru thin films.** *A.S. Samardak*[1], A.G. Kolesnikov[1], A. Ognev[1], L. Chebotkevich[1], A. Sadovnikov[3], Y.J. Kim[2], I.H. Cha[2] and Y.K. Kim[2] *1. School of Natural Sciences, Far Eastern Federal University, Vladivostok, Russian Federation; 2. Materials Science and Engineering, Korea University, Seoul, The Republic of Korea; 3. Nonlinear Physics, Saratov State University, Saratov, Russian Federation*

**GU-10**. **Empirical correlation between Dzyaloshinskii-Moriya interaction and electronegativity in Pt/Co/X trilayers.** *Y. Park*[1,2], M. Park[1], D. Kim[1] and S. Choe[1] *1. Physics and Astronomy, Seoul National University, Seoul, The Republic of Korea; 2. Center for Spintronics, Korea Institute of Science and Technology, Seoul, The Republic of Korea*

**GU-11**. **Effects of capping layer on formation and magnetic properties of MnBi thin films for spintronic applications.** *P. Quarterman*[1], D. Zhang[2], K. Schliep[3], Y. Lv[2] and J. Wang[2] *1. Electrical Engineering, University of Minnesota, Saint Paul, MN; 2. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN; 3. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN*

**GU-12**. **Phase Diagram of Isolated Skyrmions in a Ferromagnet.** *F. Buettner*[1] and G. Beach[1] *1. Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA*

FRIDAY MORNING 9:30 — GRAND BALLROOM

## Session GV
## VOLTAGE CONTROLLED MAGNETISM III (Poster Session)
Ian Gilbert, Chair
NIST, Gaithersburg, MD

**GV-01**. **Design of High Throughput and Low Power Perpendicularly Magnetized Magnetoelectric Junction (MEJ) based True Random Number Generator.** *H. Lee*[1], F. Ebrahimi[2], P. Khalili[1] and K.L. Wang[1] *1. UCLA, Los Angeles, CA; 2. Inston.Inc, Santa Monica, CA*

**GV-02**. **Enhanced Tunability of Electrical and Magnetic Properties in (La,Sr)$MnO_3$ Thin Films via Field-assisted Oxygen Vacancy Modulation.** *H. Wong*[1], S. Ng[1], W. Cheng[1], X. Chen[1], C. Mak[1], J. Dai[1] and C. Leung[1] *1. Department of Applied Physics, The Hong Kong Polytechnic University, Hong Kong, China*

**GV-03**. **A Source Line Sensing (SLS) Scheme in Magnetoelectric Random Access Memory (MeRAM) for Reducing Read Disturbance and Improving Sensing Margin.** *H. Lee*[1], C. Grezes[1], F. Ebrahimi[2], P. Gupta[1], P. Khalili[2] and K.L. Wang[1] *1. Electrical Engineering, University of California, Los Angeles, Los Angeles, CA; 2. Inston Inc, Los Angeles, CA*

**GV-04**. **A qualitative picture for voltage controlled magnetic anisotropy.** *J. Zhang*[1], P. Lukashev[2], S. Jaswal[1] and E.Y. Tsymbal[1] *1. Department of Physics and Astronomy, University of Nebraska, Lincoln, NE; 2. Department of Physics, University of Northern Iowa, Cedar Falls, IA*

**GV-05**. **Exchange bias controlled by electric current: Interplay of Joule heating and the induced field.** *K. Oda*[1], T. Moriyama[1], M. Kawaguchi[1], M. Kamiya[1], K. Tanaka[1], K. Kim[1] and T. Ono[1] *1. Institute for Chemical Research, Kyoto University, Uji city, Japan*

**GV-06**. **Inherent Voltage Control of the Spin Polarization Sign in Semiconducting Nb-doped $SrTiO_3$.** *A.M. Kamerbeek*[1], R. Ruiter[1] and T. Banerjee[1] *1. Physics of Nanodevices, Zernike Institute for Advanced Materials, Groningen, Netherlands*

**GV-07**. **Magnetoresistive Detection of Pinned Uncompensated Magnetization in Antiferromagnetic FeMn.** *P.N. Lapa*[1,2], I.V. Roshchin[2,3], J. Ding[1], J.E. Pearson[1], V. Novosad[1], S. Jiang[1] and A. Hoffmann[1] *1. Materials Science Division, Argonne National Laboratory, Argonne, IL; 2. Department of Physics and Astronomy, Texas A&M University, College Station, TX; 3. Department of Material Science and Engineering, Texas A&M University, College Station, TX*

**GV-08**. **Micromagnetic Simulation of Electric-Field-Assisted Magnetization Switching in Perpendicular Magnetic Tunnel Junction.** *C. Yoshida*[1], H. Noshiro[1], Y. Yamazaki[1], T. Sugii[1], T. Tanaka[2], A. Furuya[2] and Y. Uehara[2] *1. Fujitsu Limited, Atsugi, Japan; 2. Fujitsu Limited, Kawasaki, Japan*

**GV-09**. **Strain Manipulation Of Antiferromagnetic Domains In $Mn_2Au$.** *A. Sapozhnik*[1,2], S. Finizio[3], R. Abrudan[4], M. Kläui[1], H. Elmers[1], H. Zabel[1] and M. Jourdan[1] *1. Institute of Physics, Johannes Gutenberg University, Mainz, Germany; 2. Graduate School Material Science in Mainz, Mainz, Germany; 3. SYN, Paul Scherrer Institut, Villigen PSI, Switzerland; 4. Helmholtz Zentrum Berlin für Materialien und Energie, Berlin, Germany*

**GV-10**. **Charge-induced spin torque and voltage-driven magnetization switching in Weyl semimetals.** *D. Kurebayashi*[1] and K. Nomura[1] *1. Institute for Materials Research, Tohoku University, Sendai, Japan*

**GV-11**. **Manipulation of Magnetism in Co/Fullerene $C_{60}$ Through Thermoelectric Stimuli.** *M.D. Rogers*[1], T. Moorsom[1], F. Al Ma'Mari[1], M. Ali[1], B. Hickey[1] and O. Cespedes[1] *1. School of Physics & Astronomy, University of Leeds, Leeds, United Kingdom*

**GV-12**. **Synthesis of compensated ferrimagnetic $Mn_2CrGa$ with Pt or Fe substitution for Cr.** *W. Zhang*[1], P.R. Kharel[2], S. Valloppilly[1], T. Chen[3], R. Skomski[4] and D.J. Sellmyer[1,4] *1. Nebraska Center for Materials and Nanoscience, University of Nebraska, Lincoln, NE; 2. Physics, South Dakota State University, Brookings, SD; 3. Physics, Arizona State University, Tempe, AZ; 4. Physics and Astronomy, University of Nebraska, Lincoln, NE*

**GV-13**. **Spin dependent charge trapping in C60 studied via XAS.** *T. Moorsom*[1], M.D. Rogers[1], F. Al Ma'Mari[1], P. Gargiani[2], M. Valvidares[2], S. Lee[3], G. Burnell[1] and O. Cespedes[1] *1. School of Physics & Astronomy, University of Leeds, Leeds, United Kingdom; 2. BOREAS beamline, ALBA Synchrotron Light Facility, Barcelona, Spain; 3. School of Physics and Astronomy, University of St. Andrews, St Andrews, United Kingdom*

**GV-14**. **Electric field effect on perpendicular magnetic anisotropy in Fe/MgO interfaces annealed at different temperatures.** Q. Xiang[1,2], H. Sukegawa[1], S. Kasai[1] and *S. Mitani*[1,2] *1. National Institute for Materials Sciences, Tsukuba, Japan; 2. University of Tsukuba, Tsukuba, Japan*

## Session GW
# POWER AND CONTROL MAGNETICS IV (Poster Session)

Seidikkuripppu Piramanayagam, Chair
Nanyang Technological University, Singapore

**GW-01**. **Measuring Magnetic Properties of Non-Oriented Electrical Steel Sheets in Arbitrary Directions under Compressive Stress Normal to Their Surface.** *Y. Maeda*[1], S. Urata[1], H. Nakai[1], Y. Takeuchi[2], S. Yanase[2] and Y. Okazaki[2] *1. Toyota Central R&D Labs., Inc., Nagakute, Japan; 2. Gifu University, Gifu, Japan*

**GW-02**. **Loss Reduction of Vehicle Horn using Slinky-Laminated Pole and Armature.** *J. Sim*[1], K. Jung[1], S. Hwang[1] and J. Hong[1] *1. Automotive Engineering, Hanyang University, Seoul, The Republic of Korea*

**GW-03**. **Improvement in Thrust Force Estimation of Solenoid Valve applying Minor Hysteresis Loop.** *M. Yoon*[1], Y. Choi[1] and J. Hong[1] *1. Hanyang University, Seoul, The Republic of Korea*

**GW-04**. **New Approach of *D-Q* Equivalent Circuit of IPMSM Considering Reversed Magnetic Field at Inter-Turn Fault State.** *B. Kang*[1] and J. Hur[2] *1. Electrical Engineering, University of Ulsan, Ulsan, The Republic of Korea; 2. Electrical and Electronic Engnerring, Incheon National University, Incheon, The Republic of Korea*

**GW-05**. **Dynamic Analysis Method of A Rotating Shaft with Magnetic Pattern.** H. Hsiao[1], S. Shih[1] and *J. Chang*[1] *1. Power Mechanical Engineering, National Tsing Hua University, Hsinchu, Taiwan*

**GW-06**. **Torque Analysis and Measurement of Halbach Array Magnetic Spur Gear Based on 3-D Analytical Method.** *T. Bang*[1], K. Shin[1], M. Koo[1], H. Cho[2] and J. Choi[1] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Dept. Electric, Electronic, and Commucation Eng. Edu., Chungnam National Univ., Daejeon, The Republic of Korea*

**GW-07**. **Torque Characteristic Analysis and Measurements of Axial Flux Type Non-Contact Permanent Magnet Device with Halbach Array Based on 3D Analytical Method.** *G. Jang*[1], M. Koo[1], C. Baek[1] and J. Choi[1] *1. Electrical Engineering, Chung Nam National University, Daejoen, The Republic of Korea*

**GW-08**. **Irreversible Demagnetization Characteristic Analysis according to Speed Change in Constant Torque Region of PM BLDC Motor.** *J. Park*[1], H. Kim[1] and J. Hur[2] *1. Ulsan University, Ulsan, The Republic of Korea; 2. Incheon International University, Incheon, The Republic of Korea*

**GW-09**. **Irreversible Demagnetization Detection Method using Voltage Harmonic Characteristic in Off-line and On-line Systems of IPM-type BLDC Motor.** *D. Kang*[1], H. Kim[2] and J. Hur[3] *1. Electrical Engineering, University of Ulsan, Ulsan, The Republic of Korea; 2. University of Ulsan, Ulsan, The Republic of Korea; 3. Incheon National University, Incheon, The Republic of Korea*

FRIDAY AFTERNOON 1:30

MARDI GRAS A-E

## Session HA
# SYMPOSIUM: ALL OPTICAL SWITCHING
Eric Fullerton, Chair
UC San Diego, La Jolla, CA

**1:30**

**HA-01**. **Femtosecond Control of Electric Currents and Spins with Polarized Light in Magnets.** ***(Invited)*** *A. Kimel*[1] *1. Radboud University, Nijmegen, Netherlands*

**2:06**

**HA-02**. **Accumulative magnetic switching of ultra-high-density recording media by circularly polarized light.** ***(Invited)*** *Y. Takahashi*[1], R. Medapalli[2], S. Kasai[1], J. Wang[1], K. Ishioka[1], S. Wee[3], O. Hellwig[3], K. Hono[1] and E.E. Fullerton[2] *1. NIMS, Tsukuba, Japan; 2. UC San Diego, La Jolla, CA; 3. Western Digital Company, San Jose, CA*

**2:42**

**HA-03**. **Towards optimization of thermally induced magnetization switching.** ***(Invited)*** *T.A. Ostler*[1], U. Atxitia[2], C. Xu[3] and O. Chubykalo-Fesenko[4] *1. Physique des Matériaux et Nanostructures, Université de Liège, Liège, Belgium; 2. Fachbereich Physik, Universität Konstanz, Konstanz, Germany; 3. Physics, The University of York, York, United Kingdom; 4. Insituto de Ciencia de Materiales de Madrid, Madrid, Spain*

**3:18**

**HA-04**. **Ultrafast All-Optical Switching of Magnetic Tunnel Junctions With Sub-Picosecond Infrared Laser Pulses.** ***(Invited)*** J. Chen[1], L. He[2], J. Wang[1] and *L. Mo*[2] *1. Electrical and Computer Engineering, School of Physics & Astronomy, Minneapolis, MN; 2. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN*

**3:54**

**HA-05**. **Heat Assisted Magnetic Recording - From The Reserach Lab To The Real World.** ***(Invited)*** *J. Thiele*[1], G. Ju[1], C. Rea[2], T. Rausch[3], M. Seigler[2] and E.C. Gage[3] *1. Seagate Technology, Fremont, CA; 2. Seagate Technology, Bloomington, MN; 3. Seagate Technology, Shakopee, MN*

## Session HB
# SPIN CURRENT AND RELATED EFFECTS III
Tingyong Chen, Chair
Arizona State University, Tempe, AZ

**1:30**

**HB-01**. **Towards efficient spin orbit torque.** ***(Invited)*** *W. Han*[1,2] *1. International Center for Quantum Materials, Peking University, Beijing, China; 2. Collaborative Innovation Center of Quantum Matter, Beijing, China*

**2:06**

**HB-02**. **Thin Films Of Topological Kondo Insulator $SmB_6$: Strong Spin-orbit Torque Without Surface Conduction.** *Y. Li*[1], Q. Ma[2], S. Huang[1] and C. Chien[1] *1. Department of Physics and Astronomy, Johns Hopkins Univeristy, Baltimore, MD; 2. Physics and Astronomy, Johns Hopkins University, Baltimore, MD*

**2:18**

**HB-03**. **Scaling for the spin-electricity current conversion on surface state of topological Insulators.** *K. Yamamoto*[1], Y. Shiomi[1,2], K. Segawa[3,4], Y. Ando[3,5] and E. Saitoh[2,6] *1. Institute for Materials Research, Tohoku University, Sendai, Japan; 2. Spin Quantum Rectification Project, ERATO, Japan Science and Technology Agency, Sendai, Japan; 3. Institute of Scientific and Industrial Research, Osaka University, Osaka, Japan; 4. Department of Physics, Kyoto Sangyo University, Kyoto, Japan; 5. Institute of Physics II, University of Cologne, Cologne, Germany; 6. WPI-AIMR, Tohoku University, Sendai, Japan*

**2:30**

**HB-04**. **Direct comparison of current-induced spin polarization in topological insulators and InAs Rashba states.** *C.H. Li*[1], O. van 't Erve[1], S. Rajput[3], L. Li[3] and B. Jonker[2] *1. Naval Research Laboratory, Washington, DC; 2. Naval Research Laboratory/SSD, Washington, DC; 3. Physics, University of Wisconsin, Milwaukee, Milwaukee, WI*

**2:42**

**HB-05**. **Experimental and theoretical study of phonon skew scattering in Platinum.** *G. Vijay Karnad*[1], C. Gorini[2], K. Lee[1], U. Eckern[3], R. Raimondi[4], T. Schulz[1], R. Lo Conte[1,5], N. Kim[6], D. Han[7], J. Kim[7], C. You[6], H. Swagten[7] and M. Kläui[1,5] *1. Institute of Physics, Johannes Gutenberg - University Mainz, Mainz, Germany; 2. University of Regensburg, Regensburg, Germany; 3. University of Augsburg, Augsburg, Germany; 4. Roma Tre University, Rome, Italy; 5. Graduate School of Excellence "Materials Science in Mainz"(MAINZ), Mainz, Germany; 6. Department of Physics, Inha University, Incheon, The Republic of Korea; 7. Eindhoven University of Technology, Eindhoven, Netherlands*

**2:54**

**HB-06**. **Gigantically enhanced interface spin current transparency by Kondo effect in iron-doped coppe.** *S. Yang*[1], P. Xu[2], W. Zhang[3], J. Jeong[1], Y. Ferrante[4] and S.S. Parkin[5] *1. IBM Almaden Research Center, San Jose, CA; 2. MPI, Halle, Germany; 3. MSE, Stanford, Stanford, CA; 4. Spintronics and Magnetoelectronics, IBM Almaden Research Center, San Jose, CA; 5. Max Planck Institute for Microstructure Physics, Halle (Saale), Germany*

**3:06**

**HB-07**. **Impact of Magnetic Impurities on Spin Injection and Relaxation in Metallic Non-Local Spin Valves. *(Invited)*** L. O'Brien[1,2], D. Spivak[1], J.D. Watts[1], M. Erickson[1], J.S. Jeong[1], K.A. Mkhoyan[1], K. Kim[3], M. Stiles[3], N. Krueger[1], T. Peterson[1], B.T. Bolon[4], C.C. Geppert[1], H. Ambaye[5], R. Goyette[5], V. Lauter[5], P. Crowell[1] and *C. Leighton*[1] *1. University of Minnesota, Minneapolis, MN; 2. University of Cambridge, Cambridge, United Kingdom; 3. National Institute of Standards and Technology - Gaithersburg, Gaithersburg, MD; 4. Physics, Hamline University, Saint Paul, MN; 5. Oak Ridge National Lab, Oak Ridge, TN*

**3:42**

**HB-08**. **Large and tunable spin Hall angles in gold based alloys.** *J. Rojas-Sanchez*[1,2], P. Laczkowski[2], Y. Fu[3], P. Noël[3], N. Reyren[2], C. Deranlot[2], S. Collin[2], A. Marty[3], P. Warin[3], J. Attane[3], H. Jaffres[2], J. George[2], L. Vila[3] and A. Fert[2] *1. Institut Jean Lamour - Univ. Lorraine UMR7198 CNRS, 54506 Vandoeuvre les Nancy, France; 2. Unité Mixte de Physique, CNRS, Thales, Univ. Paris-Sud, Université Paris-Saclay, 91767, Palaiseau, France; 3. SPINTEC, CEA-INAC/CNRS/Univ. Grenoble Alpes, 38054 Grenoble, France*

**3:54**

**HB-09**. **Influence of dc-bias current on spin transfer torque ferromagnetic resonance in NiFe/Pt bilayer.** *S. Hirayama*[1,2], S. Kasai[1] and S. Mitani[1,2] *1. National Institute for Materials Science, Tsukuba, Japan; 2. University of Tsukuba, Tsukuba, Japan*

**4:06**

**HB-10**. **Dynamics of the spin currents in acoustic and optical modes of ferromagnetic resonance in spin valve multilayers.** *A. Timopheev*[1], Y.G. Pogorelov[2], S. Cardoso[3], P.P. Freitas[3], G.N. Kakazei[4] and N. Sobolev[5] *1. INAC - Institute for Nanoscience and Cryogenics, SPINTEC Laboratory, CEA Grenoble, Grenoble, France; 2. Departamento de Fisica, Universidade do Porto, Porto, Portugal; 3. INESC-MN and IN-Institute of Nanoscience and Nanotechnology, Lisbon, Portugal; 4. IFIMUP-IN/Department of Physics, University of Porto, Porto, Portugal; 5. Departamento de Física and I3N, Universidade de Aveiro, Aveiro, Portugal*

**4:18**

**HB-11**. **Dependence of spin-charge transduction efficiency on Py/Pt stacking order measured by VNA-FMR.** *A.J. Berger*[1], E. Edwards[1], H. Nembach[1], J. Shaw[1], A.D. Karenowska[2], M. Weiler[3] and T. Silva[1] *1. Div. 687, NIST, Boulder, CO; 2. Physics, University of Oxford, Oxford, United Kingdom; 3. Walther-Meißner-Institut, Garching, Germany*

FRIDAY
AFTERNOON
1:30

LA GALERIES 1-2

## Session HC

# SPIN TORQUE OSCILLATORS

Igor Zutic, Chair
University at Buffalo, Buffalo, NY

**1:30**

**HC-01**. **Stochastic spintronic devices for bio-inspired computing.** ***(Invited)*** *A. Mizrahi*[1,2], N. Locatelli[2], R. Lebrun[3], A. Difini-Accioly[2], V. Cros[4], A. Fukushima[5], H. Kubota[6], S. Yuasa[7], J. Kim[2], D. Querlioz[2] and J. Grollier[1] *1. Unité Mixte CNRS/Thales, Bourg la Reine, France; 2. Institut d'Electronique Fondamentale, Université Paris-Saclay, Orsay, France; 3. UMR CNRS/THALES, Palaiseau, France; 4. Unité Mixte de Physique CNRS/Thales, Palaiseau, France; 5. AIST, Tsukuba, Japan; 6. National Institute of Advance Industrial Science and Technology (AIST), Tsukuba, Japan; 7. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

**2:06**

**HC-02**. **Suppression of phase noise in spin toque oscillator stabilized by phase locked loop.** ***(Invited)*** *S. Tamaru*[1], H. Kubota[1], K. Yakushiji[1], S. Yuasa[1] and A. Fukushima[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan*

**2:42**

**HC-03**. **Spin pumping driven auto-oscillator for phase-encoded logic.** *S. Rakheja*[1] and N. Kani[2] *1. Electrical and Computer Engineering, New York University, Brooklyn, NY; 2. Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA*

**2:54**

**HC-04**. **An Electrically Coupled Spin-Hall Oscillator Array for Pattern Matching Operation.** *K. Kudo*[1] and T. Morie[2] *1. Research and Development Center, Toshiba Corporation, Kawasaki, Japan; 2. Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, Kitakyushu, Japan*

3:06

**HC-05**. **Enhancing the mutual synchronization range of electrically coupled spin-torque oscillators by selecting the vortex excitation mode.** *M. Romera*[1], P. Talatchian[1], R. Lebrun[1], K.J. Merazzo[2,3], P. Bortolotti[1], L. Vila[2], J. Costa[4], R. Ferreira[4], P.P. Freitas[4], M. Cyrille[2,3], U. Ebels[2], V. Cros[1] and J. Grollier[1] *1. Unité Mixte de Physique CNRS Thales, Univ. Paris-Sud, Université Paris-Saclay, Palaiseau, France; 2. Univ. Grenoble Alpes, CEA, CNRS, SPINTEC, F-38000 Grenoble, France; 3. Univ. Grenoble Alpes, CEA-LETI MINATEC, F-38000 Grenoble, France; 4. International Iberian Nanotechnology Laboratory (INL), 4715-31, Braga, Portugal*

3:18

**HC-06**. **Enhancement of emission power by electrical mutual synchronization of 4 nano-oscillators.** *S. Tsunegi*[1], R. Lebrun[2], K. Yakushiji[1], A. Fukushima[1], V. Cros[2], S. Yuasa[1] and H. Kubota[1] *1. Spintronics Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Palaiseau, France; 2. Unité Mixte de Physique CNRS/Thales, Palaiseau, France*

3:30

**HC-07**. **Effect of the incoherent spin dynamics induced by thermal agitation on the emission power of a spin torque oscillator.** *H. Imamura*[1], H. Arai[2], B. Wang[4] and H. Kubota[3] *1. Spintronics Research Center, AIST, Tsukuba, Japan; 2. National Institute of AIST, Tsukuba, Ibaraki, Japan; 3. National Institute of Advance Industrial Science and Technology (AIST), Tsukuba, Japan; 4. National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan*

3:42

**HC-08**. **Ultrafast Spectrum Analyzer Based on the Injection Locking of a Spin-Torque Nano-Oscillator.** S. Louis[1], I. Lisenkov[2,3], *V. Tyberkevych*[2], J. Li[1], R. Khymyn[2], E. Bankowski[4], T. Meitzler[4] and A.N. Slavin[2] *1. Electrical and Computer Engineering, Oakland University, Rochester, MI; 2. Department of Physics, Oakland University, Auburn Hills, MI; 3. Kotelnikov Institute of Radio-engineering and Electronics of RAS, Moscow, Russian Federation; 4. U.S. Army TARDEC, Warren, MI*

3:54

**HC-09**. **Large-Angle Dynamics of Co-Mn-Ge Spin Transfer Nanocontact Oscillators.** *M. Pufall*[1], J. Shaw[1], E. Edwards[1] and W. Rippard[1] *1. National Institute of Standards and Technology, Boulder, CO*

4:06

**HC-10**. **Direct observation of mutually synchronized spin Hall nano-oscillators using micro-Brillouin Light Scattering.** *A.A. Awad*[1], P. Dürrenfeld[1], A. Houshang[1], M. Dvornik[1], E. Iacocca[1], R.K. Dumas[1] and J. Akerman[2,1] *1. Physics department, University of Gothenburg, Gothenburg, Sweden; 2. Materials and Nano Physics, KTH Royal Institute of Technology, Kista, Sweden*

**4:18**

**HC-11**. **Current-Induced Dynamics in Coupled $Co_2$(Fe,Mn)Si Magnetic Vortices.** *T. Yamamoto*[1], T. Seki[1,2] and K. Takanashi[1] *1. IMR, Tohoku Univ., Sendai, Japan; 2. JST-PRESTO, Saitama, Japan*

FRIDAY AFTERNOON 1:30 — LA GALERIES 3

## Session HD

# MAGNETOELECTRONIC MATERIALS AND TRANSPORT III

Weigang Wang, Co-Chair
University of Arizona, Tucson, AZ
Chong Bi, Co-Chair
University of Arizona, Tucson, AZ

**1:30**

**HD-01**. **Disentangling Interface and Bulk Contributions to the Anisotropic Magnetoresistance in Pt/Co/Pt Sandwiches.** *A. Philippi-Kobs*[1,2] and H.P. Oepen[2] *1. Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany; 2. Universität Hamburg, Hamburg, Germany*

**1:42**

**HD-02**. **Magnetism, Electron-transport and Spin Polarization of Epitaxial CoFeCrAl Films.** *Y. Jin*[1,2], P.R. Kharel[3,2], S. Valloppilly[2], X. Li[2], D. Kim[4], G. Zhao[4], T. Chen[4], R. Skomski[1,2] and D.J. Sellmyer[1,2] *1. Physics and Astronomy, University of Nebraska - Lincoln, Lincoln, NE; 2. Nebraska Center for Materials and Nanoscience, University of Nebraska Lincoln, Lincoln, NE; 3. Physics, South Dakota State University, Brookings, SD; 4. Physics, Arizona State University, Mesa, AZ*

**1:54**

**HD-03**. **Magnetic characterisation of MBE grown $Cr_xSb_2Te_3$ Magnetic Topological Insulator through electrical transport.** *A. Singh*[1], V. Kamboj[1], L. Mcintyre[2], T. Hesjedal[2], D. Ritchie[1] and C. Barnes[1] *1. Physics, University of Cambridge, Cambridge, United Kingdom; 2. Physics, University of Oxford, Oxford, United Kingdom*

**2:06**

**HD-04**. **High field magnetotransport in thin films of the topological insulator $Bi_2Se_3$.** *E. de Vries*[1], M. Meijer[2], S. Pezzini[2], N. Koirala[3], M. Salehi[4], J. Moon[3], S. Oh[3], S. Wiedmann[2] and T. Banerjee[1] *1. University of Groningen, Groningen, Netherlands; 2. High Field Magnet Laboratory, Radboud University, Nijmegen, Netherlands; 3. Department of Physics & Astronomy, Rutgers, State University of New Jersey, Piscataway, NJ; 4. Department of Materials Science and Engineering, Rutgers, State University of New Jersey, Piscataway, NJ*

2:18

**HD-05**. **Nonadiabatic Berry Phase in Nanocrystalline Magnets.** *R. Skomski*[1] and D.J. Sellmyer[1] *1. Physics and Astronomy, University of Nebraska - Lincoln, Lincoln, NE*

2:30

**HD-06**. **Determination of spin polarization of half-Heusler NiMnSb by nonlocal spin valve measurement.** *G. Qu*[1,2], P. Cheng[1,2], Y. Sakuraba[1], S. Kasai[1], T. Furubayashi[1], T. Ohkubo[1] and K. Hono[1,2] *1. Research Centre for Magnetic and Spintronic Materials, National Institute for Materials Science, Tsukuba, Japan; 2. Graduate School of Pure and Applied Sciences, University of Tsukuba, Tsukuba, Japan*

2:42

**HD-07**. **Nanometer Resolved Profiles Of Half-Metallic Full Heusler Alloy Thin Films Determined From Polarised Neutron Reflectometry.** *S.E. Glover*[1], T. Saerbeck[2], B. Kuerbanjiang[3], Z. Nedelkoski[3], D. Kepaptsoglou[4], A. Ghasemi[3], S. Yamada[5], C. Burrows[1], Q.M. Ramasse[4], P.J. Hasnip[1], K. Hamaya[5], A. Hirohata[6], V. Lazarov[3], T.P. Hase[1] and G. Bell[1] *1. Physics, University of Warwick, Coventry, United Kingdom; 2. Institut Laue-Langevin, Grenoble, France; 3. Physics, University of York, York, United Kingdom; 4. SuperSTEM laboratory, SciTech Daresbury Campus, Daresbury, United Kingdom; 5. Department of Systems Innovation, Osaka University, Toyonaka, Japan; 6. Electronics, University of York, York, United Kingdom*

2:54

**HD-08**. **Atomic and Electronic Study of $Co_2FeAl_{0.5}Si_{0.5}$/Ge(111) Interface.** *B. Kuerbanjiang*[1], Z. Nedelkoski[1], D. Kepaptsoglou[2], A. Ghasemi[1], S.E. Glover[3], S. Yamada[4], A. Sanchez[3], Q.M. Ramasse[2], T.P. Hase[3], G. Bell[3], K. Hamaya[4], A. Hirohata[1] and V. Lazarov[1] *1. University of York, York, United Kingdom; 2. SuperSTEM Laboratory, Daresbury, United Kingdom; 3. Physics, University of Warwick, Coventry, United Kingdom; 4. Department of Systems Innovation, Osaka University, Toyonaka, Japan*

3:06

**HD-09**. **Computational Investigation of Heusler Alloys for Spintronic Applications.** *J. Ma*[1], K. Munira[2], Y. Xie[1], S. Keshavarz[2,3], A.W. Ghosh[1] and W. Butler[2,3] *1. Department of Electrical and Computer Engineering, University of Virginia, Charlottesville, VA; 2. Center for Materials for Information Technology, University of Alabama, Tuscaloosa, AL; 3. Department of Physics and Astronomy, University of Alabama, Tuscaloosa, AL*

3:18

**HD-10**. **Determining the effects of epitaxy on low moment Heusler-type $Mn_3Al$ thin films.** *M.E. Jamer*[1], Y. Wang[2], J. Borchers[1], B.J. Kirby[1], B. Barbiellini[2], A. Bansil[2] and D. Heiman[2] *1. NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD; 2. Physics, Northeastern University, Boston, MA*

**3:30**

**HD-11**. **Reduced Interface Spin Polarization By Antiferromagnetically Coupled Mn Segregated $Co_2MnSi$/GaAs(001) Interface.** *A. Rath*[1], C. Shivakumar[2], S. Patel[3], K. Christie[4], T. Peterson[4], G. Stecklein[4], P. Crowell[4], C. Palmstrøm[3], W. Butler[2] and P. Voyles[1] *1. Department of Materials Science and Engineering, University of Wisconsin-Madison, Madison, WI; 2. Department of Physics and Center for Materials and Information Technology, University of Alabama, Tuscaloosa, AL; 3. Department of Materials Science and Engineering, University of California-Santa Barbara, Santa Barbara, CA; 4. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN*

**3:42**

**HD-12**. **Magneto-transport properties of pseudo-single-crystal $Mn_4N$ thin films.** *K. Kabara*[1], M. Tsunoda[1] and S. Kokado[2] *1. Department of Electronics Engineering, Tohoku University, Sendai, Japan; 2. Graduate School of Integrated Science and Technology, Shizuoka University, Hamamatsu, Japan*

**3:54**

**HD-13**. **Anomalous Hall effect in $L1_0$-MnAl films with controllable orbital two-channel Kondo effect.** L. Zhu[1], S. Nie[1] and *J. Zhao*[1] *1. State Key Laboratory For Superlattices And Microstructures, Institute of Semiconductors, Chinese Academy of Sciences, Beijing, China*

**4:06**

**HD-14**. **Highly sensitive flexible magnetic sensor based on anisotropic magnetoresistance effect.** *Z. Wang*[1], X. Wang[1], M. Li[2] and N.X. Sun[2] *1. ECE, Northeastern University, Boston, MA; 2. Northeastern University, Boston, MA*

**4:18**

**HD-15**. **High-Pressure Magnetotransport Measurements of the Semimetallic Ferromagnet $EuB_6$.** *D.T. Simmons*[1], L. Yu[1], S. von Molnar[1], P. Xiong[1], J. Zhu[2], C. Ren[2] and Z. Fisk[3] *1. Florida State University, Tallahassee, FL; 2. Institute of Physics Chinese Academy of Sciences, Beijing, China; 3. University of California, Irvine, CA*

## Session HE
# SPIN TRANSPORT IN TWO-DIMENSIONAL MATERIALS

Ching-Tzu Chen, Chair
IBM Thomas J Watson Research Center, Yorktown Heights, NY

**1:30**

**HE-01**. **Spin transport in two-dimensional materials and van der Waals heterostructures.** ***(Invited)*** *S.P. Dash*[1] *1. Microtechnology and Nanoscience, Chalmers University of Technology, Gothenburg, Sweden*

**2:06**

**HE-02**. **Strong Interfacial Exchange Field in the Graphene/EuS Heterostructure.** ***(Invited)*** *C. Chen*[1] *1. IBM TJ Watson Research Center, Yorktown Heights, NY*

**2:42**

**HE-03**. **A Two-Dimensional Spin Field-Effect Transistor.** W. Yan[1], O. Txoperena[1], H. Dery[2], F. Casanova[1] and *L.E. Hueso*[1] *1. CIC nanoGUNE, San Sebastian, Spain; 2. University of Rochester, Rochester, NY*

**2:54**

**HE-04**. **Giant Spin Accumulation in Graphene by Electrical Spin Injection through SrO Tunnel Barrier.** *R. Kawakami*[1], S. Singh[1], J. Katoch[1], T. Zhu[1], R. Wu[2], A. Ahmed[1], K.A. Mkhoyan[2] and P.A. Crowell[3] *1. Department of Physics, The Ohio State University, Columbus, OH; 2. Department of Chemical Engineering & Materials Science, University of Minnesota, Minneapolis, MN; 3. Physics and Astronomy, University of Minnesota, Minneapolis, MN*

**3:06**

**HE-05**. **Spin Lifetimes Exceeding 12 ns in Graphene Nonlocal Spin Valve Devices.** M. Drögeler[1], C. Franzen[1], F. Volmer[1], T. Pohlmann[1], L. Banszerus[1], M. Wolter[1], K. Watanabe[2], T. Taniguchi[2], C. Stampfer[1,3] and *B. Beschoten*[1] *1. 2nd Institute of Physics and JARA-FIT, RWTH Aachen University, Aachen, Germany; 2. National Institute for Materials Science, Tsukuba, Japan; 3. Peter Grünberg Institute (PGI-9), Forschungszentrum Jülich, Jülich, Germany*

**3:18**

**HE-06**. **Nanosecond Spin Relaxation Times in Single Layer Graphene Spin Valves with Hexagonal Boron Nitride Tunnel Barriers.** *J. Xu*[1], S. Singh[1], J. Katoch[1], C. Tan[3], T. Zhu[1], W. Amamou[2], J. Hone[3] and R. Kawakami[1,2] *1. Physics, The Ohio State University, Columbus, OH; 2. Physics and Astronomy, UC Riverside, Riverside, CA; 3. Mechanical Engineering Department, Columbia University, New York, NY*

**3:30**

**HE-07**. **Spin Absorption In Graphene Lateral Spin Valves For Spin Transfer Torque Devices.** *W. Amamou*[1], G. Stecklein[2], S. Turkyilmaz[3], T. Zhu[4], S. Singh[4], J. Katoch[4], S.J. Koester[2], P.A. Crowell[2] and R. Kawakami[4] *1. Physics and Astronomy, UC Riverside, Riverside, CA; 2. University of Minnesota, Minneapolis, MN; 3. Electrical Engineering, UC Riverside, Riverside, CA; 4. Physics, The Ohio State University, Columbus, OH*

**3:42**

**HE-08**. **Spin Signal Inversion in Ferromagnet|Hexagonal Boron Nitride-Graphene van der Waals Heterostructure Non-local Spin Valves.** *M. Kamalakar*[1,2], A. Dankert[1], P. Kelly[3] and S.P. Dash[1] *1. Department of Microtechnology and Nanoscience, Chalmers University of Technology, Göteborg, Sweden; 2. Department of Physics and Astronomy, Uppsala University, UPPSALA, Sweden; 3. Faculty of Science and Technology and MESA+ Institute for Nanotechnology, University of Twente, Enschede, Netherlands*

**3:54**

**HE-09**. **Spin-Orbit Torques In Topological Insulator Ferromagnets.** *M. Ramezani Masir*[1], N. Okuma[2] and A.H. MacDonald[3] *1. University of Texas at Austin, Austin, TX; 2. Physics, University of Tokyo, Tokyo, Japan; 3. Physics, University of Texas at Austin, Austin, TX*

**4:06**

**HE-10**. **Temperature dependence of ferromagnetic resonance spectra of Py deposited on $(Bi_{1-x}Sb_x)_2Te_3$ .** *S. Gupta*[1], S. Kanai[2,3], F. Matsukura[1,3] and H. Ohno[2,3] *1. WPI-Advanced Institute for Materials Research (WPI-AIMR), Tohoku University, Sendai, Japan; 2. Laboratory for Nanoelectronics and Spintronics, Research Institute of Electrical Communication, Tohoku University, Sedai, Japan; 3. Center for Spintronics Integrated Systems, Tohoku University, Sendai, Japan*

**4:18**

**HE-11**. **MOKE measurements of spin polarization in topological insulators.** *B. Jonker*[1], O. van 't Erve[1], S. Rajput[2], L. Li[2] and C.H. Li[1] *1. Materials Science & Technology Division, Naval Research Laboratory, Washington, DC; 2. Department of Physics, University of Wisconsin, Milwaukee, Milwaukee, WI*

## Session HF
# SOFT MAGNETIC MATERIALS IV

Hongbin Yu, Chair
Arizona State University, Tempe, AZ

**1:30**

**HF-01**. **Soft magnetic properties of rapidly-annealed nanocrystalline Fe-Nb-B alloys.** R.R. Parsons[1], B. Zang[1], K. Onodera[2], H. Kishimoto[3], A. Kato[3] and *K. Suzuki*[1] *1. Department of Materials Science and Engineering, Monash University, Clayton, VIC, Australia; 2. Toyota Motor Corporation, Toyota, Japan; 3. Toyota Motor Corporation, Susono, Japan*

**1:42**

**HF-02**. **Left-handed metacomposites containing carbon fibers and ferromagnetic microwires.** *Y. Luo*[1], F. Scarpa[1], F. Qin[3], M. Ipatov[2], A. Zhukov[2] and H. Peng[3] *1. ACCIS, University of Bristol, Bristol, United Kingdom; 2. Dpto. de Fisica de Materiales, Universidad del Pais Vasco, San Sebastian, Spain; 3. Institute for Composites Science Innovation, Zhejiang University, Hangzhou, China*

**1:54**

**HF-03**. **High frequency soft magnetic properties of (hcp-Co)-$SiO_2$ nano-granular films with high perpendicular magnetic anisotropy.** *H. Aoki Kijima*[1,2], H. Masumoto[1], K. Arai[3] and M. Yamaguchi[4] *1. Frontier Research Institute for Interdisciplinary Sciences, Tohoku University, Sendai, Japan; 2. Department of Electrical Engineering, Tohoku University, Sendai, Japan; 3. DENJIKEN, Sendai, Japan; 4. Graduate School of Engineering, National Institute for Materials Science, Sendai, Japan*

**2:06**

**HF-04**. **Effect of heating rate during primary crystallization on soft magnetic properties of melt-spun Fe-B alloys.** B. Zang[1], R.R. Parsons[1], K. Onodera[2], H. Kishimoto[4], A. Kato[4], A. Liu[3,5] and *K. Suzuki*[1] *1. Department of Materials Science and Engineering, Monash University, Clayton, VIC, Australia; 2. Toyota Motor Corporation, Toyota, Japan; 3. Monash Centre for Electron Microscopy, Monash University, Clayton, VIC, Australia; 4. Toyota Motor Corporation, Susono, Japan; 5. School of Physics and Astronomy, Monash University, Clayton, VIC, Australia*

**2:18**

**HF-05**. **Effects of cold reduction on recrystallization and grain growth behavior of textures using in-situ heating EBSD in 3% Si non-oriented electrical steels.** *H. Mun*[1], Y. Koo[1] and S. Lee[2] *1. POSTECH, Pohang, The Republic of Korea; 2. POSCO, Pohang, The Republic of Korea*

**2:30**

**HF-06**. **Magnetic Properties and Crystallization Kinetics of $(Fe_xNi_{1-x})_{80}Nb_4Si_2B_{14}$ Metal Amorphous Nanocomposites.** *N. Aronhime*[1], E. Zoghlin[1], V. Keylin[1], X. Jin[1] and M.E. McHenry[1] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA*

**2:42**

**HF-07**. **Soft Magnetic Properties and Damping Parameter of Fe-Al Alloy Thin Films.** *I. Kanada*[1,2], A. Cruce[1,3], T. Mewes[1,3], S. Wu[1,3], C.K. Mewes[1,3], G. Mankey[1,3] and T. Suzuki[1,4] *1. Center for Materials for Information Technology, The University of Alabama, Tuscaloosa, AL; 2. Materials Development Center, TDK Corporation, Narita, AL; 3. Department of Physics and Astronomy, The University of Alabama, Tuscaloosa, AL; 4. Departments of Electrical and Computer Engineering and Metallurgical and Materials Engineering, The University of Alabama, Tuscaloosa, AL*

**2:54**

**HF-08**. **Influence of Temperature on Magnetic Property of Silicon Steel Lamination.** *J. Chen*[1,2], D. Wang[1], X. Zheng[3], Z. Chen[1], F. Birnkammer[2] and D. Gerling[2] *1. Naval University of Engineering, Wuhan, China; 2. University of Federal Defense Munich, Munich, Germany; 3. Huazhong University of Science and Technology, Wuhan, China*

**3:06**

**HF-09**. **The Effect of Ni Addition on Microstructure and Soft-magnetic Properties of FeCoZrBCu Nanocrystalline Alloys.** *B. Shen*[1], X. Fan[1] and Y. Tang[1] *1. School of Materials Sciences and Engineering, Southeast University, Nanjing, China*

**3:18**

**HF-10**. **Evolution of FINEMET powders microstructure and magnetic properties versus dry/wet milling conditions.** L.C. Budeanu[1,2], L.C. Whitmore[1], G. Ababei[1], G. Stoian[1], H. Chiriac[1], M. Neagu[2] and *N. Lupu*[1] *1. National Institute of Research and Development for Technical Physics, Iasi, Romania; 2. Faculty of Physics, Alexandru Ioan Cuza University, Iasi, Romania*

**3:30**

**HF-11**. **Final thickness reduction and development of Goss texture in C- and Al-free Fe-3%Si-0.1%Mn-0.012%S electrical steel.** *N. Heo*[1], E. Oh[1] and Y. Koo[1] *1. POSTECH, Pohang. Gyeongbuk, The Republic of Korea*

**3:42**

**HF-12**. **Probing the magnetic structure of $Co_2Fe_xMn_{1-x}Si$ thin films.** *A. Hauser*[1], J. Phillips[1], M. Pendharkar[2], S. Patel[2] and C. Palmstrøm[2] *1. University of Alabama, Tuscaloosa, AL; 2. Materials, University of California-Santa Barbara, Santa Barbara, CA*

**3:54**

**HF-13**. **Millimeter Wave Transmittance/Absorption Measurements on Micro/Nano Hexaferrites.** *K. Korolev*[1,2], S. Chen[3], Y. Chen[4], R. Barua[1], M. Afsar[5] and V. Harris[6] *1. Northeastern University, Boston, MA; 2. Extremely High Frequency Medical and Technical Association, Moscow, Russian Federation; 3. Arent Fox LLP, Washington, DC; 4. Rogers Innovation Center, Burlington, MA; 5. Tufts University, Medford, MA; 6. Northeastern University, Boston, MA*

**4:06**

**HF-14**. **Mössbauer study and magnetic properties of $MgFe_2O_4$ crystallized from the glass system $B_2O_3/K_2O/P_2O_5/MgO/Fe_2O_3$.** *S.M. El Shabrawy*[1], C. Rüssel[1], C. Bocker[1], P. Schaaf[3], M. Georgieva[4], R. Harizanova[2,1], M. Miglierini[5] and D. Tzankov[4] *1. Otto-Schott Institute for Materials Research, Jena, Germany; 2. Department of Physics, University of Chemical Technology and Metallurgy, Sofia, Bulgaria; 3. Ilmenau University of Technology, Illmenau, Germany; 4. University of Sofia, St. Kl. Ohridski, Sofia, Bulgaria; 5. Department of Nuclear Reactors, Czech Technical University in Prague, Prague, Czech Republic*

**4:18**

**HF-15**. **Magnetic Properties Of Sintered $CoFe_2O_4$ Particulate Prepared Using Conventional and Ultrafast Microwave Furnaces.** K.R. Jimenez[1], C.P. Perdomo[2], A.J. Gualdi[1], P.C. de Camargo[1,3], D. Garcia[1], R.H. Kiminami[2] and *A.J. de Oliveira*[1] *1. Physics Department, Federal University of São Carlos, São Carlos, Brazil; 2. Department of Materials Engineering, Federal University of São Carlos, São Carlos, Brazil; 3. Institute of Advanced and Strategic Studies, Federal University of São Carlos, São Carlos, Brazil*

FRIDAY AFTERNOON 1:30 — STUDIO 9-10

## Session HG

# MAGNETO-ELASTIC, MAGNETO-OPTIC, AND MICROWAVE MATERIALS

Norman Wereley, Co-Chair
University of Maryland, College Park, MD
Ivan Lisenkov, Co-Chair
Oakland University, Auburn Hills, MI

**1:30**

**HG-01**. **Control Of The Magnetization Dynamics In Magnetostrictive Nanostructures Through The Magneto-Elastic Coupling Effect.** *S. Finizio*[1], E. Kirk[1], S. Wintz[1] and J. Raabe[1] *1. Paul Scherrer Institut, Villigen PSI, Switzerland*

**1:42**

**HG-02. Magnetostriction Measurements on Large-grained FeCo Samples.** *N.J. Jones*[1], D.L. Schlagel[2], P.K. Lambert[3] and T.A. Lograsso[2] *1. Physical Metallurgy and Fire Protection, Naval Surface Warfare Center, Carderock Division, Bethesda, MD; 2. Materials Science and Engineering, Ames Laboratory, Ames, IA; 3. Materials Science and Engineering, Johns Hopkins University, Baltimore, MD*

**1:54**

**HG-03. Study of Heusler type 1D nanostructures fabricated by electrodeposition method.** *K. Javed*[1,2], U. Khan[1], L. Wenjing[1], M. Irfan[1], S. Ali[1] and X. Han[1] *1. Chinese Academy of Sciences, Institute of Physics, Beijing, China; 2. Physics, Forman Christian College (University), Lahore, Pakistan*

**2:06**

**HG-04. Withdrawn**

**2:18**

**HG-05. Giant magnetically induced reorientation of martensitic variants in magnetic shape memory Ni-Mn-Ga thin films by microstructure engineering.** *F. Albertini*[1], S. Fabbrici[1,2], F. Casoli[1], L. Nasi[1], P. Ranzieri[1], M. Campanini[1], C. Magen[3], F. Celegato[4], G. Barrera[4], P. Tiberto[4,1], G. Varvaro[5] and E. Villa[6] *1. IMEM-CNR, Parma, Italy; 2. MIST E-R, Bologna, Italy; 3. Instituto de Nanociencia de Aragón, Zaragoza, Spain; 4. INRIM, Torino, Italy; 5. ISM-CNR, Roma, Italy; 6. IENI-CNR, Lecco, Italy*

**2:30**

**HG-06. Withdrawn**

**2:30**

**HG-07. Withdrawn**

**2:30**

**HG-08. Dependence of Giant Strain Induced Anisotropy in Co-based Nanocomposites on Early Transition Metal Virtual Bound States (VBS) for Inductive Applications.** *V.G. DeGeorge*[1], M.E. McHenry[1], A. Leary[2], V. Keylin[1], A. Devaraj[3] and P. Ohodnicki[4] *1. Materials Science and Engineering, Carnegie Mellon University, Pittsburgh, PA; 2. Carnegie Mellon University, Pittsburgh, PA; 3. Environmental Molecular Sciences Lab, Pacific Northwest National Laboratory, Richland, WA; 4. National Energy Technology Laboratory, Pittsburgh, PA*

**2:42**

**HG-09. Magnetic Properties of Ni Coated Fibers In A Polymer Matrix.** *Z. Celinski*[1], R.E. Camley[1], S. Goldman[1], K. Livesey[1], T. Robinson[2], D. Meyers[2] and S. Maat[2] *1. Physics, University of Colorado, Colorado Springs, Colorado Springs, CO; 2. YTC - America, Camarillo, CA*

**2:54**

**HG-10**. **A new microwave material for C to U Band Application; BaM/YIG Nano-composites.** V. Sharma[1], S. Kumari[1] and *B.K. Kuanr*[1,2] *1. Special Centre for Nanoscience, Jawaharlal Nehru University, Delhi, India; 2. Department of Physics, University of Colorado at Colorado Springs, Colorado Springs, CO*

**3:06**

**HG-11**. **Soft Magnetic Multilayered Thin Films With Tunable Magnetic Properties For High Frequency Applications.** *C. Falub*[1], H. Rohrmann[1], M. Bless[1], J.H. Richter[1], M. Meduna[2,3] and M. Padrun[1] *1. Evatec AG, Trübbach, Switzerland; 2. Department of Condensed Matter Physics, Masaryk University, Brno, Czech Republic; 3. CEITEC, Masaryk University, Brno, Czech Republic*

**3:18**

**HG-12**. **Characterization of Nanostructure Ferrite Material on Gallium Nitride on SiC Substrate for Millimeter Wave Integrated Circuit.** *B. O'Keefe*[1], T. Liang[1], M.N. Afsar[1] and V. Koomson[1] *1. Electrical and Computer Engineering, Tufts University, Somerville, MA*

**3:30**

**HG-13**. **Miniaturization of Magneto-optical Q-switched Laser Using Magnetic Garnet Films.** *R. Morimoto*[1], T. Goto[1,2], J.W. Pritchard[3], H. Takagi[1], Y. Nakamura[1], P. Lim[1], M. Mina[3], T. Taira[4], H. Uchida[1] and M. Inoue[1] *1. Toyohashi University of Technology, Toyohashi, Japan; 2. JST PRESTO, Kawaguchi, Japan; 3. Iowa State University, Ames, IA; 4. Institute for Molecular Science, Okazaki, Japan*

**3:42**

**HG-14**. **Optical Polarization Rotation Induced by Spin-Orbit Coupling in Polarons.** *B. Casals*[1], R. Cichelero[1], P. García-Fernández[2], J. Junquera[2], D. Pesquera[1], M. Campoy-Quiles[3], I.C. Infante[1], F. Sanchez[1], J. Fontcuberta[1] and G. Herranz[1] *1. Institut de Ciència de Materials de Barcelona ICMAB-CSIC, Bellaterra, Spain; 2. Departamento CITIMAC, Universidad de Cantabria, Santander, Spain; 3. Institut de Ciència de Materials de Barcelona ICMAB-CSIC, Barcelona, Spain*

**3:54**

**HG-15**. **Novel Faraday Rotation Terbium Iron Garnets (TIG) for Seedlayer-free Polarization-diverse Integrated Isolators.** P. Dulal[1], T.E. Gage[2], A. Block[3], E. Cofell[4], D. Hutchings[5], *B. Stadler*[3,1] and C. Zhang[5] *1. Chemical Engineering & Materials Science/ Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN; 2. Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN; 3. Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN; 4. Scripps College, Claremont, CA; 5. School of Engineering, University of Glasgow, Glasgow, United Kingdom*

## Session HH
# ENERGY ASSISTED RECORDING II
Christoph Vogler, Chair
Vienna University of Technology, Vienna, Austria

**1:30**

**HH-01**. **New Composite Media for High Density Heat Assisted Magnetic Recording.** *Z. Liu*[1] and R.H. Victora[1] *1. University of Minnesota, Minneapolis, MN*

**1:42**

**HH-02**. **Temperature variation in granular media during heat assisted magnetic recording.** *A. Ghoreyshi*[1] and R.H. Victora[1] *1. Electrical Engineering, University of Minnesota, Minneapolis, MN*

**1:54**

**HH-03**. **Effects of ion-irradiation and annealing on $L1_0$ ordering in FePt-C/BN thin films.** *J.C. De Rojas*[1], D. Ravelosona[2], J. Reiner[3], O. Hellwig[3] and K. Liu[1] *1. Physics Department, University of California, Davis, CA; 2. Institut d'Electronique Fondamentale, Orsay, France; 3. Western Digital Company, San Jose, CA*

**2:06**

**HH-04**. **Ru addition into $L1_0$-FePt thin film to lower $T_c$ for heat-assisted magnetic recording.** *T. Ono*[1,2], H. Nakata[1,2], T. Moriya[1,2], N. Kikuchi[3], S. Okamoto[3], O. Kitakami[3] and T. Shimatsu[2,4] *1. Fuji Electric Co., Ltd., Sendai, Japan; 2. FRIS, Tohoku University, Sendai, Japan; 3. IMRAM, Tohoku University, Sendai, Japan; 4. RIEC, Tohoku University, Sendai, Japan*

**2:18**

**HH-05**. **Thermal Stability of HAMR Media Based on Exchange Bias.** K. Elphick[1], *G. Vallejo-Fernandez*[1], T.J. Klemmer[2], J. Thiele[2] and K. O'Grady[1] *1. University of York, York, United Kingdom; 2. Seagate Media Research, Fremont, CA*

**2:30**

**HH-06**. **$T_c$ controlled TbFe/GdFeCo hybrid thermo-magnetic structure for small switching field and high thermal stability.** *A. Tsukamoto*[1], Y. Sonobe[2] and H. Yoshikawa[3] *1. College of Science and Technology, Nihon University, Funabashi, Japan; 2. Samsung R&D Institute Japan, Yokohama, Japan; 3. Graduate School of Science and Technology, Nihon University, Funabashi, Japan*

2:42

**HH-07**. **Effect of CrB insertion on the (001) texture of MgO seed layer and magnetic properties of FePt-C HAMR media.** *J. Wang*[1], Y. Takahashi[1], K. Yakushiji[2], H. Sepehri-Amin[1], H. Kubota[2] and K. Hono[1] *1. Magnetic Materials Unit, NIMS, Tsukuba, Japan; 2. Spintronics Research Center, AIST, Tsukuba, Japan*

2:54

**HH-08**. **Effect of substrate surface roughness on the texture and magnetic property of FePt-C granular film.** *J. Wang*[1], Y. Takahashi[1], H. Sepehri-Amin[1] and K. Hono[1] *1. Magnetic Materials Unit, NIMS, Tsukuba, Japan*

3:06

**HH-09**. **Write-Position Shifts in Heat-Assisted Magnetic Recording.** *Z. Wang*[1], J. Hohlfeld[2], C. Rea[2] and R.H. Victora[1,3] *1. School of Physics and Astronomy, University of Minnesota, Minneapolis, MN; 2. Seagate Technology, Bloomington, MN; 3. Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN*

3:18

**HH-10**. **Write Field Design for Transition Curvature Straightening and SNR Enhancement in Heat Assisted Magnetic Recording.** *J. Zhu*[1] and H. Li[1] *1. Data Storage Systems Center, Carnegie Mellon University, Pittsburgh, PA*

3:30

**HH-11**. **Switching-Field Reduction of a Perpendicular Magnetic Nanodot by Microwave Magnetic Field Emitted from a Spin-Torque Oscillator.** *H. Suto*[1], T. Kanao[1], T. Nagasawa[1], K. Kudo[1], K. Mizushima[1] and R. Sato[1] *1. Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan*

3:42

**HH-12**. **Reduction of Critical Current Density in Spin-Torque-Oscillator Device for Microwave Assisted Magnetic Recording.** *H. Sepehri-Amin*[1], S. Bosu[1], Y. Sakuraba[1], M. Hayashi[1], T. Schrefl[2], C. Abert[3], D. Suess[3] and K. Hono[1] *1. Research Center for Magnetic and Spintronic Materials, National Institute for Materials Science (NIMS), Tsukuba, Japan; 2. Center for Integrated Sensor Systems, Danube University Krems, St. Poelten, Austria; 3. Institute of Solid State Physics, Christian Doppler Laboratory for Advanced Magnetic Sensing and Materials, Vienna University of Technology, Vienna, Austria*

3:54

**HH-13**. **Microwave Assisted Magnetization Switching Behaviors in a Ferrimagnetic Amorphous Gd-Fe-Co Single Dot.** *Y. Lu*[1], S. Okamoto[1,3], N. Kikuchi[1,3], B. Lao[1], Y. Kusanagi[1], O. Kitakami[1,3] and T. Shimatsu[2,3] *1. IMRAM Tohoku University, Sendai, Japan; 2. FRIS Tohoku University, Sendai, Japan; 3. CSRN Tohoku University, Sendai, Japan*

4:06

**HH-14**. **Generation of high frequency large angle out of plane oscillation in mag-flip spin torque oscillator using in-plane magnetized $Fe_2Co$ field generation layer and highly spin polarized FePt/$Co_2FeGa_{0.5}Ge_{0.5}$ perpendicular spin injection layer.** *S. Bosu*[1], H. Sepehri-Amin[1], Y. Sakuraba[1], S. Kasai[1], M. Hayashi[1] and K. Hono[1] *1. National Institute for Materials Science, Tsukuba, Japan*

4:18

**HH-15**. **Stability analysis of microwave-assisted magnetization reversal in exchange coupled nano magnets.** *T. Yamaji*[1] and H. Imamura[1] *1. Spintronics Research Center, AIST, Tsukuba, Japan*

FRIDAY STUDIO 3-4
AFTERNOON
1:30

## Session HI
# POWER AND CONTROL MAGNETICS V
Jen-Yuan (James) Chang, Chair
National Tsing Hua University, Hsinchu, Taiwan

1:30

**HI-01**. **Magnetic Force-Assisted Nonlinear Three-Dimensional Wideband Energy Harvester Using Magnetostrictive/ Piezoelectric Composite Transducers.** *Z. Lin*[1], X. Li[1], J. Liu[1] and J. Yang[1] *1. Optoelectronic Engineering, Chongqing University, Chongqing, China*

1:42

**HI-02**. **Implications of Core Material on the Modulator Design in Magnetic Gears.** *N. Fernando*[1] and S. Saha[1] *1. School of Engineering, RMIT University, Melbourne, VIC, Australia*

1:54

**HI-03**. **A Novel Fractional-Slot Concentrating-Windings Permanent Magnet Machine with Segmented Rotor.** *T. Sheng*[1], S. Niu[1], X. Zhao[1] and W. Fu[1] *1. Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong, China*

2:06

**HI-04**. **Effect of Partial Saturation of Bonded Neo Magnet on the Automotive Accessory Motor.** *N.K. Sheth*[1] and R. Angara[1] *1. R&D, Magnequench Neo Powders Pte Ltd, Singapore, Singapore*

**2:18**

**HI-05**. **Design and Analysis of a Flux Switching Permanent Magnet Machine of 3D Flux Path with SMC Cores and Ferrite Magnets.** *C. Liu*[1], Y. Wang[1], J. Zhu[2], Y. Guo[2] and G. Lei[2] *1. College of Electrical Engineering, Hebei University of Technology, Tianjin, China; 2. University of Technology, Sydney, Sydney, NSW, Australia*

**2:30**

**HI-06**. **Interior Rare-earth Free Permanent Magnet Synchronous Motor (IPMSM) for Electric Vehicles.** *H. Won*[1], Y. Hong[1], J. Park[1], W. Lee[1], M. Choi[1], S. Bae[2], C. Choi[3] and G. Mankey[4] *1. Electrical and Computer Engineering and MINT Center, The University of Alabama, Tuscaloosa, AL; 2. Components & Materials R&D Center, LG Innotek, Ansan-si, The Republic of Korea; 3. Korea Institute of Materials Science, Changwon, The Republic of Korea; 4. Department of Physics & Astronomy and MINT Center, The University of Alabama, Tuscaloosa, AL*

**2:42**

**HI-07**. **Experimental Verification and Analytical Calculation of Unbalanced Magnetic Force in Permanent Magnet Synchronous Motors.** *K. Shin*[1], J. Choi[1] and H. Cho[2] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Dept. Electric, Electronic, and Commucation Eng. Edu., Chungnam National Univ., Daejeon, The Republic of Korea*

**2:54**

**HI-08**. **A Novel Flux-switching Permanent Magnet Machine with V-Shaped Magnets.** *G. Zhao*[1], H. Wei[1] and P. Su[1] *1. Southeast University, Nanjing, China*

**3:06**

**HI-09**. **Experimental validation of a distribution theory based analysis of the effect of manufacturing tolerances on Permanent Magnet Synchronous Machines.** *M. Trapanese*[1], V. Franzitta[1], D. Curto[1], D. Rao[1] and A. Viola[1] *1. DEIM, Università di Palermo, Palermo, Italy*

**3:18**

**HI-10**. **A theory of magnetic and thermal properties of thermomagnetic generator.** *M. Trapanese*[1], V. Franzitta[1], A. Viola[1], D. Curto[1] and D. Rao[1] *1. DEIM, Università di Palermo, Palermo, Italy*

**3:30**

**HI-11**. **Experimental Validation of a High-Speed Permanent-Magnet Motor for AC Compression Systems.** *D. Gonzalez*[1] *1. Danfoss, Tallahassee, FL*

**3:42**

**HI-12**. **Performance Comparison Between Rotor Flux-Switching and Stator Flux- Switching Machines Considering Irreversible Demagnetization.** P. Su[1] and *H. Wei*[1] *1. Electric Engineering, Southeast University, Nanjing, China*

**3:54**

**HI-13**. **Analytical Prediction for Electromagnetic Performance of Interior Permanent Magnet Synchronous Machines Based on Subdomain Model.** *K. Shin*[1], H. Park[1], H. Cho[2] and J. Choi[1] *1. Dept. of Electrical Engineering, Chungnam National University, Daejeon, The Republic of Korea; 2. Dept. Electric, Electronic, and Commucation Eng. Edu., Chungnam National Univ., Daejeon, The Republic of Korea*

**4:06**

**HI-14**. **Research on Fuzzy PI Control and Minimization of Torque Ripple of Switched Reluctance Motor.** Q. Lu[1], H. Wei[1] and *J. Qi*[1] *1. School of Electrical Engineering, Southeast University, Nanjing, China*

## - A -



*Best student presentation award finalist

*Best student presentation award finalist

## - B -



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# MMM 2017

PITTSBURGH

NOVEMBER 6-10, 2017

## 62ND CONFERENCE ON MAGNETISM AND MAGNETIC MATERIALS


**General Chair**
**Pallavi Dhagat**
dhagat@oregonstate.edu

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