



PRESS RELEASE

KEEPING IT CLEAN: LETI JOINS FOUR FRENCH PARTNERS TO TEST 'SMART' ANTIBACTERIAL SURFACES IN SPACE

Matiss Experiment Designed to Measure Most Effective Material for Cleaning International Space Station and Is Expected to Provide Earth-bound Applications

GRENOBLE, France – Nov. 15, 2016 – Leti, an institute of CEA Tech, and three French partners are collaborating in a “house-cleaning” project aboard the International Space Station that will investigate antibacterial properties of new materials in a zero-gravity environment to see if they can improve and simplify cleaning inside spacecraft.

The Matiss experiment, as part of the Proxima Mission sponsored by [France's CNES space agency](#), is based on four identical plaques that European Space Agency (ESA) astronaut Thomas Pesquet, the 10th French citizen to go into space, will take with him and install when he joins the space station in November for a six-month mission. The plaques will be in the European Columbus laboratory in the space station for at least three months, and Pesquet will bring them back to earth for analysis at the conclusion of his mission.

Leti, in collaboration with the ENS de Lyon), CNRS, the French company Saint Gobain and CNES, selected five advanced materials that could stop bacteria from settling and growing on “smart” surfaces. A sixth material, made of glass, will be used as control material.

The experiment will test the new smart surfaces in a gravity-free, enclosed environment. These surfaces are called “smart” because of their ability to provide an appropriate response to a given stimulus. For example, they may repel bacteria, prevent them from growing on the surface, or create their own biofilms that protect them from the bacteria.

The materials are a mix of advanced technology – from self-assembly monolayers and green polymers to ceramic polymers and water-repellent hybrid silica. By responding protectively to air-borne bacteria they become easier to clean and more hygienic. The experiment will determine which one is most effective and could lead to antibacterial surfaces on elevator buttons and bars in mass-transit cars, for example.

“Leveraging its unique chemistry platform, Leti has been developing gas, liquid and supercritical-phase-collective processes of surface functionalization for more than 10 years,” said Guillaume Nonglaton, Leti’s project manager for surface chemistry for biology and health-care applications. “Three Leti-developed surfaces will be part of the space-station experiment: a fluorinated thin layer, an organic silica and a biocompatible polymer. They were chosen for their hydrophobicity, or lack of attraction properties, their level of reproducibility and their rapid integration within Pesquet’s six-month mission.”

About Leti (France)

As one of three advanced-research institutes within the CEA Technological Research Division, Leti serves as a bridge between basic research and production of micro- and nanotechnologies that improve the lives of people around the world. It is committed to creating innovation and transferring it to industry. Backed by its portfolio of 2,800 patents, Leti partners with large industrials, SMEs and startups to tailor advanced solutions that strengthen their competitive positions. It has launched 59 startups. Its 8,500m² of new-generation cleanroom space feature 200mm and 300mm wafer processing of micro and nano solutions for applications ranging from space to smart devices. With a staff of more than 1,900, Leti is based in Grenoble, France, and has offices in Silicon Valley, Calif., and Tokyo. Follow us on www.leti.fr and @CEA_Leti.



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