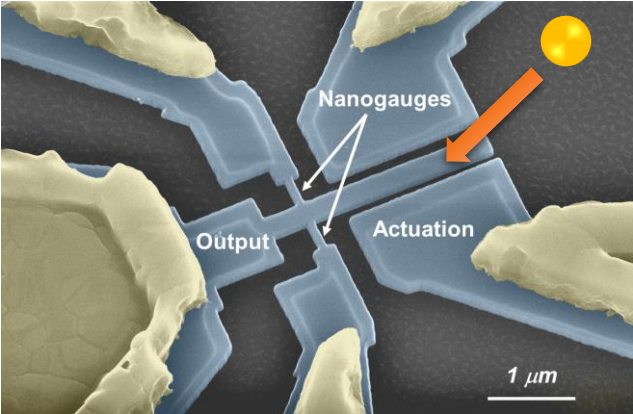


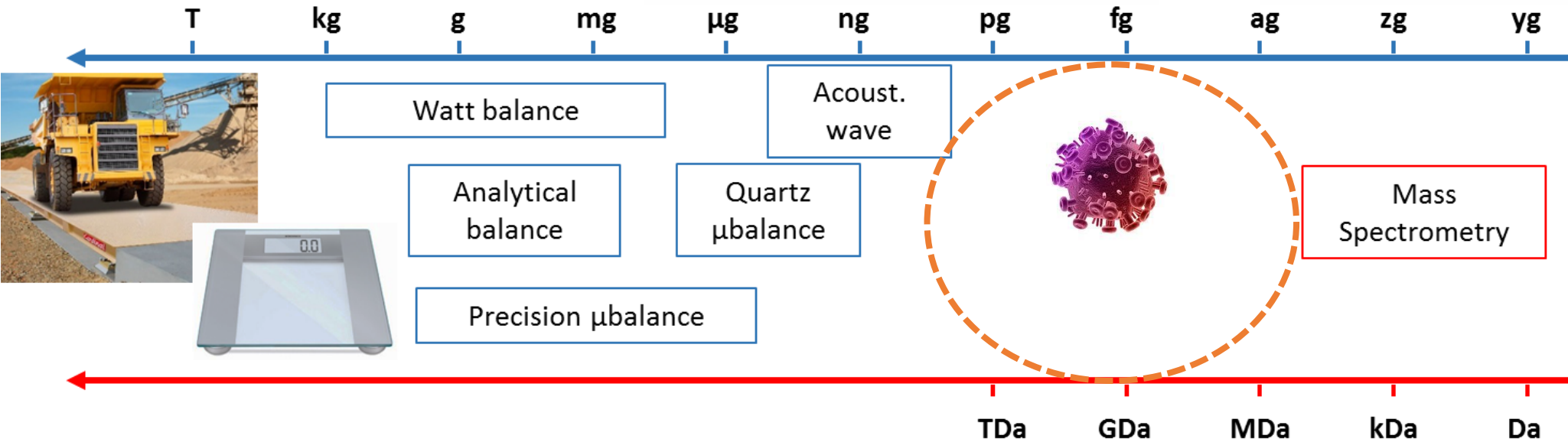
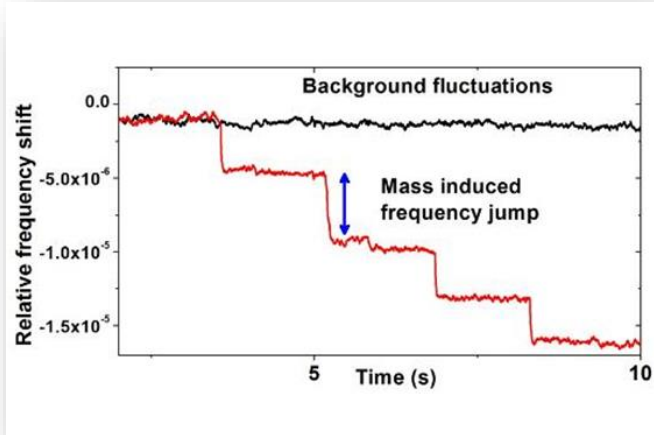
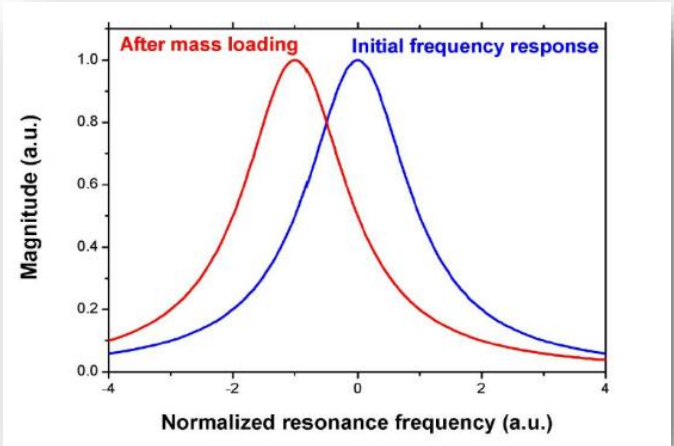
(BIO)SENSING WITH NANO-(OPTO)-RESONATORS

Sébastien Hentz

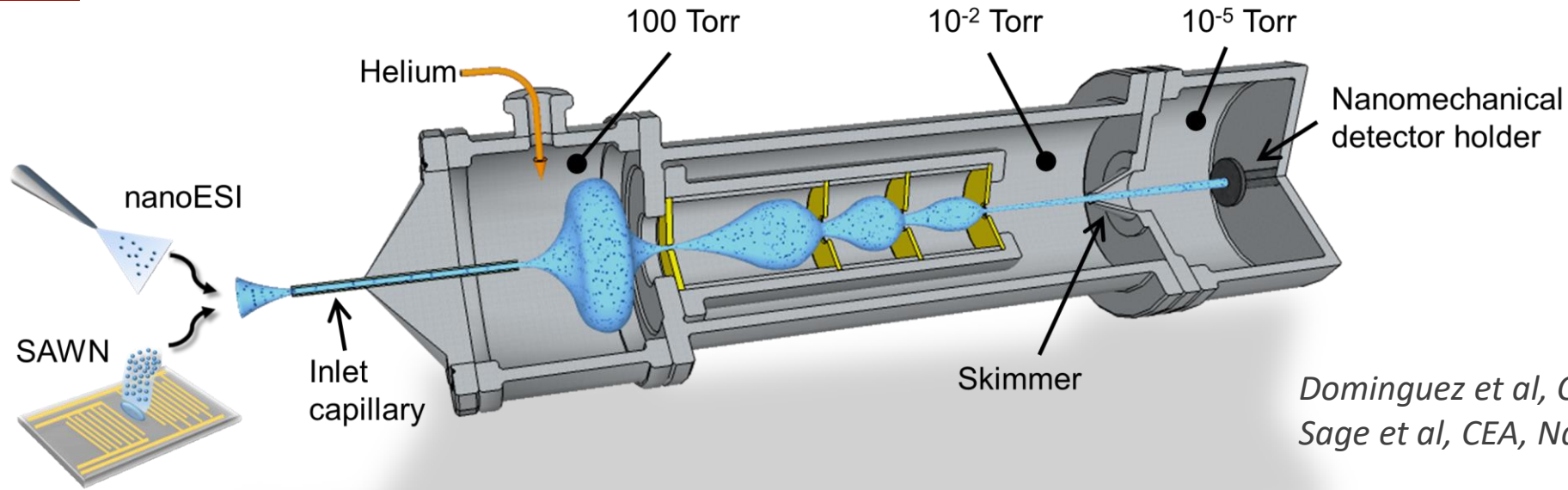
NEMS MASS SENSING



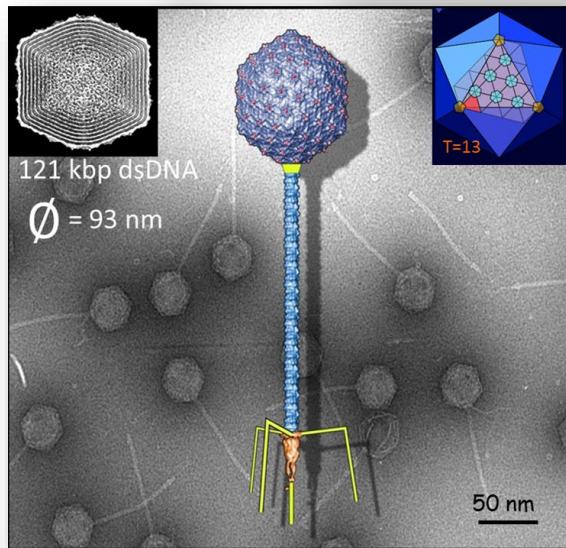
Sansa et al, LETI, Nature Nanotechnology 2016



HIGH EFFICIENCY NEUTRAL ARCHITECTURE



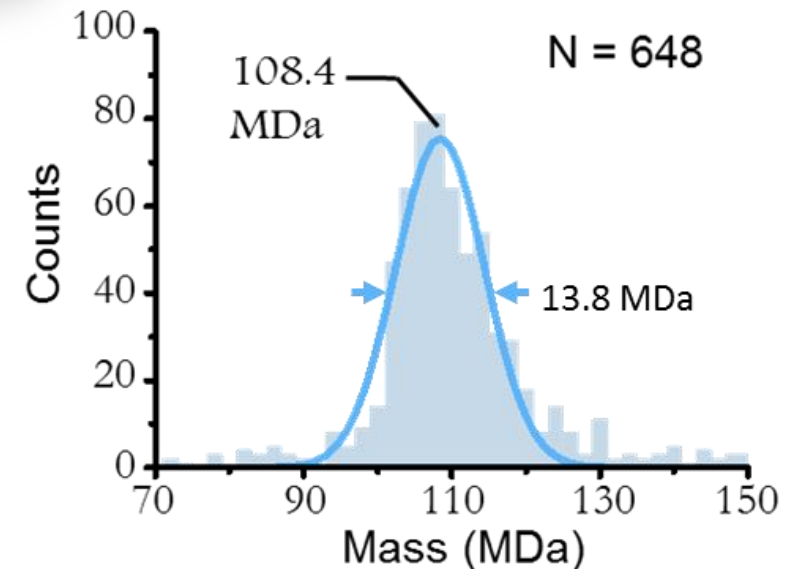
Dominguez et al, CEA, Science 2018
Sage et al, CEA, Nature Comm 2018

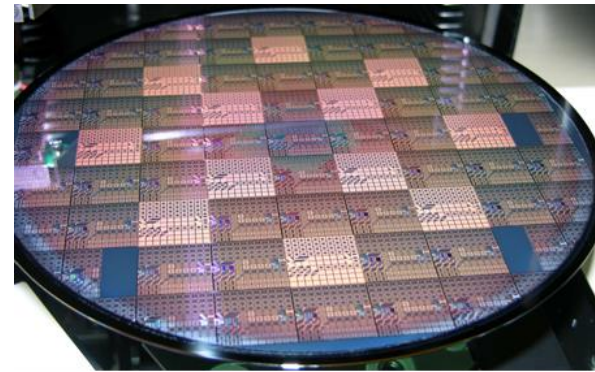
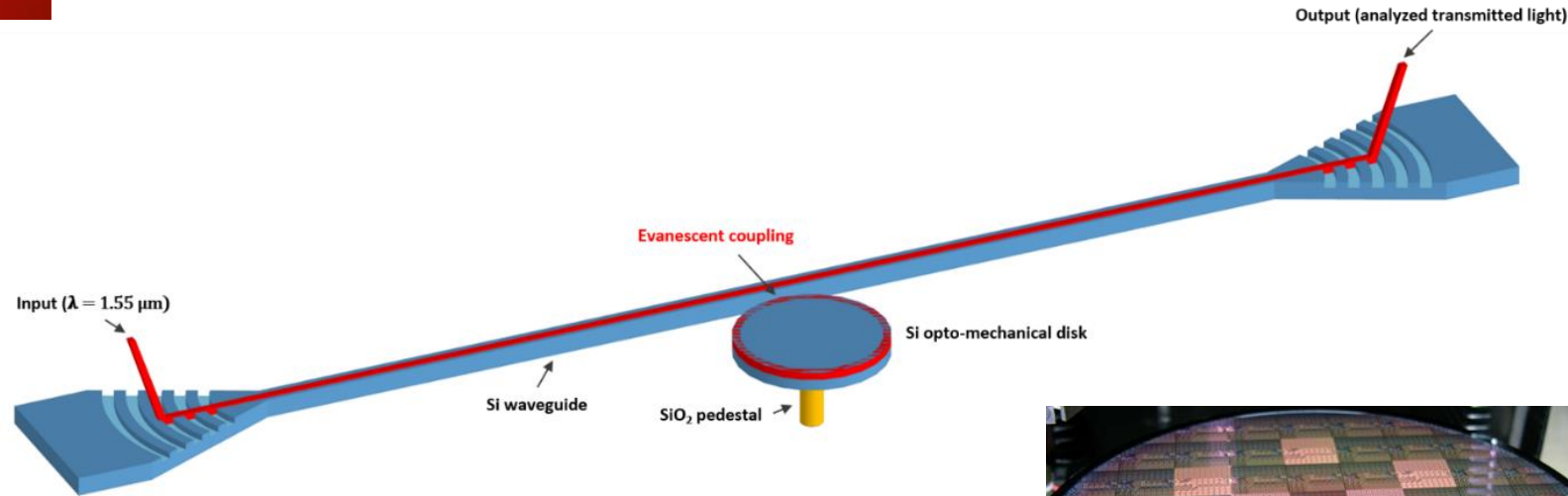


Bacteriophage T5

First measurement in this mass range

Few hour analysis time





Silicon photonics bricks

1.55μm wavelength

220nm Si thickness

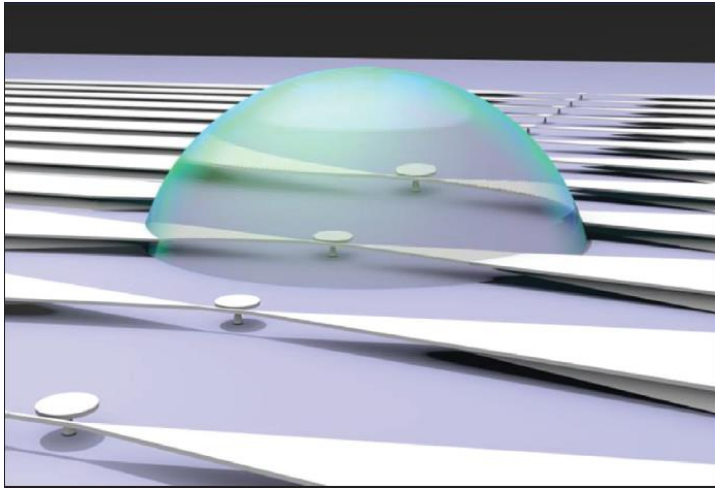
Grating couplers

Why optomechanics for sensing?

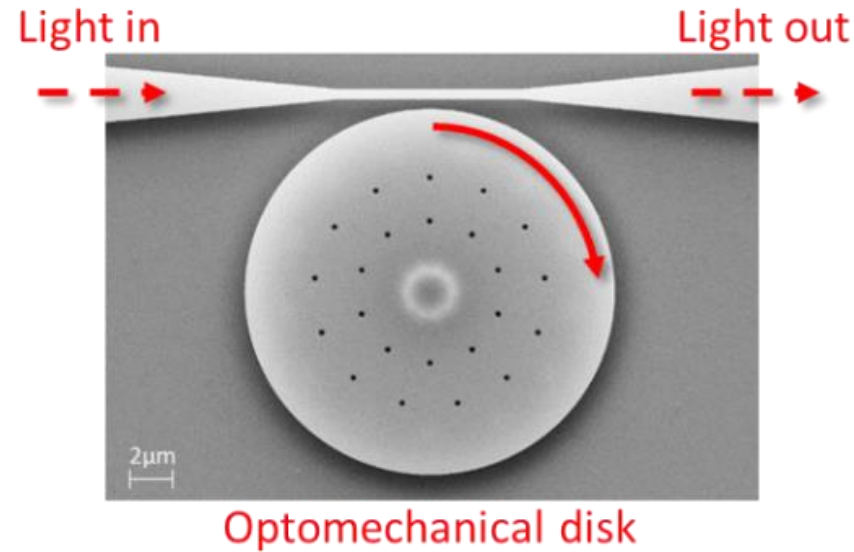
- High displacement sensitivity → small resonators
- Large bandwidth → high resonance frequencies, easy multiplexing

IMMERSED BIOSENSOR

A sensitive resonant biosensor directly immersed in liquid has eluded research for the last 15 years!



*Favero group, Paris Diderot,
Nat Nano 2015*



Thank you for your attention

