

## Nanoelectronic characterization of advanced materials using conductive atomic force microscopy

In this seminar, I will show our recent work in the field of advanced materials for solid-state microelectronic devices. I will describe some of the properties we have analyzed in graphene, molybdenum disulfide, hexagonal boron nitride, ZnO nanowires, and transition metal oxides. I will describe the setups that we have developed in order to carry out these studies, with special emphasis in conductive atomic force microscopy. The main properties that we will discuss are related to the dielectric breakdown process and resistive switching, including tunneling current, charge trapping and de-trapping, random telegraph noise, trap-assisted tunneling, stress-induced leakage current, soft and hard dielectric breakdown and resistive switching. We will also comment on the observation of piezo-electricity using the conductive atomic force microscope. Finally, I will present our work on 2D materials based memristors, and how this technology could be useful for the development of efficient hardware for neuromorphic computing and artificial intelligence systems.



The IN<sup>2</sup>UB invites you to the seminar by

**Prof. Mario Lanza**

Institute of Functional Nano & Soft Materials,  
Soochow University (China)

**SAVE THE DATE**

**May 29<sup>th</sup>, 2020 at 11h.**

**Telematic session**



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