CNRS Junior Professorship "SPADE"

Scanning Probe Microscopy:
Applications and Developments
CEMES, Toulouse, France

https://emploi.cnrs.fr/Offres/CPJ/CPJ-2025-037/Default.aspx?lang=EN

A Junior Professorship position is open by CNRS on Scanning Probe Microscopy: Applications and Developments. The CEMES, Centre d'Elaboration de Matériaux et d'Etudes Structurales, situated in Toulouse is one of the three possible hosted laboratories. CEMES is a fundamental research laboratory in condensed matter physics, nanoscience, molecular chemistry and materials science. Its activities cover a wide spectrum from the synthesis of (nano)materials and molecular systems, their integration into devices, to the study of their structures and physical properties (optical, mechanical, electronic and magnetic), from both an experimental and theoretical point of view.

CEMES facilities

CEMES hosts 2 near-field microscopes operating under ultra-high vacuum (UHV), installed in the low-noise clean rooms of the PicoLab building.

LT-UHV 4-STM/Qplus + SEM: low-temperature microscope comprising 4 independent STM heads topped by a FEG-SEM column. One of the STM heads is also equipped with the Qplus module for nc-AFM measurements at 5 K. The system is connected to a UHV preparation chamber and to another chamber equipped with a UHV transfer printer.

LT-STM/Qplus: a low-temperature scanning tunnelling microscope (STM) that can work at a temperature of 5K in STM and/or non-contact AFM mode. Equipped to prepare crystalline surfaces under UHV and to deposit thin insulating layers, it enables the deposition of metals or molecules at low temperature.

Scientific project

The person recruited will have the freedom to develop an innovative research project based on near-field microcopy, in line with the laboratory's thematic focus. He or she may join one of the laboratory's seven research groups. The possible targeted fundamental thematic includes, but is not limited to, light–matter interactions, innovative low-dimensional materials, and the effects of confinement on their properties in the broadest sense (structural, electronic, optical, magnetic, or chemical reactivity).

He/she will be able to collaborate with original experimental approaches developed in the laboratory, such as physical and chemical elaboration, electron microscopy, optical and magnetic high resolution property measurements (spatial, spectral, temporal, …), as well as with specialist in modelling and theory. He/She will benefit from the support of the laboratory's common services: cryogenics and ultra-high vacuum, mechanics, electronics, nanofabrication and nanocharacterization (clean room), growth and ion implantation, chemical syntheses. He/She will also be able to draw on the full range of skills available in the Toulouse science area.

Teaching project

Assistant professors and professors of CEMES are engaged in numerous high level teaching activities both at Toulouse University or INSA, as well as in the NanoX graduate schooland, and will support the teaching project.

CEMES is located very near the heart of the city, close to the Rangueil scientific campus. The laboratory features about 60 permanent researchers as well as 35 technicians and engineers and 40 non-permanent researchers. (https://www.cemes.fr/en/home/)

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