



Junior Professorship in “Perspectives in electron microscopy for advanced characterization of innovative materials”

Institut Neel CNRS, Grenoble, France

CNRS is expected to open a Junior Professorship position in the first semester of 2024 in competition between 4 laboratories which have recently acquired state of the art Transmission Electron Microscopes (TEM), including Institut Néel. Institut Néel is therefore looking for an excellent and motivated candidate to strengthen the research activity on advanced characterization by TEM.

Institut Neel hosts a **Jeol NEOARM** that offers exceptional possibilities in spectroscopy, measurement of electric and magnetic fields that can be combined with different in-situ options (heating, cooling and electrical biasing are already available) and the laboratory wishes to develop its activities in spectroscopy but also in-situ/operando analysis (catalysis, growth, in liquid medium, batteries in operation, etc.). The NEOARM is equipped with a cold FEG, capable of operation from 60 to 200 kV, equipped with a STEM aberration corrector, several STEM detectors including an 8 segments detector for differential phase contrast, wide angle EDX detector, GIF continuum spectrometer for electron energy loss spectroscopy, a biprism for electron holography, a Gatan Oneview camera, a direct electron detector using Medipix 3 technology, electron beam induced current, as well as electron beam precession. Multiple specimen holders are available allowing tomography, tilt rotation, cooling at both nitrogen and helium (under development) temperatures, as well as heating and in-situ electrical biasing.

Scientific project: The person recruited to the chair will develop spectroscopy methods in energy loss and/or in emitted X-rays on the new TEM in order to analyze the composition of materials quantitatively, potentially in three dimensions, and/or will use in-situ/operando methodologies on the materials and systems of interest to the laboratory. The chair will benefit from a unique environment thanks to the growth and characterization activities of the Institut Néel and the links with the lines at the ESRF and the ILL managed by the laboratory.

Scientific environment: CNRS Institut Néel is a fundamental research laboratory in physics, with a strong background in cryogenics, material synthesis and characterization, and tight links with (local) industry and start-ups, and collaborations with neighboring university and research institutes (CEA, UGA, INP).

The search for new materials – superconductors, magnetic materials, semiconductors, in different forms, from solid to nanomaterials, thin layers and 2D materials -, the analysis of property-structure relationships, the study of quantum systems are very important research axes at Institut Néel.

The laboratory is located very near the heart of the city, in an area dedicated to research and development. Surrounded by mountains and beautiful nature. The laboratory features about 200 permanent researchers as well as 120 technicians and engineers and 130 non-permanent researchers. The laboratory hosts a multitude of synthesis and characterization facilities, including state of the art TEM sample preparation facilities as well as a clean room for micro and nanofabrication.

This recruitment aims to expand the transmission electron microscopy activity to take full advantage of the new state-of-the-art Jeol NEOARM microscope which was taken into service in 2023 (<https://neel.cnrs.fr/en/news/met-the-new-world-class-microscope-in-grenoble>).

Offer: Tenure track research position for a period of 3 to 5 years, depending on the candidate's experience. Afterwards, if the evaluation is positive, the candidate will be permanently appointed as senior researcher at CNRS.

Candidate qualification: A Ph.D. and professional experience in transmission electron microscopy in material science, a solid publication record, ability to become a research group leader.

Application process: Interested candidates are invited to submit their application including:

- Cover letter outlining their research and areas of expertise.
- Curriculum vitae, including a list of publications and courses taught.
- Names and contact information of three references.

More information is available from Laurence Magaud, Director of Néel Institute (laurence.magaud@neel.cnrs.fr) and Martien den Hertog (martien.den-hertog@neel.cnrs.fr).