

## Research Engineer in Material Science/ characterization

**Affectation :** Laboratoire de Physique des Solides, ORSAY, France  
<http://www.stem.lps.u-psud.fr/type/jobs>

Closing date for applications : 28th June 2017  
<http://www.dgdr.cnrs.fr/drhita/concoursita/>

### **Mission:**

The engineer will be responsible for managing a microscopy reception platform consisting of 4 transmission electron microscopes (TEMs) and a sample preparation room. He/she will perform characterization studies on materials and nanomaterials using the NION UltraSTEM 200 and NION HERMES 200 CHROMATEM scanning TEMs (STEMs). The job will also involve the preparation of TEM samples.

### **Activities:**

- ensuring the optimal use of two aberration-corrected STEMs dedicated to ultra-high spatial and energy resolution imaging and electron energy-loss spectroscopy (EELS)
- conducting experiments in materials science and interpreting their results using various data processing and numerical simulation tools
- participating in the installation, use and where necessary adaptations of specialized software
- managing the microscope usage schedule
- managing visits from external, and in particular non-French-speaking, users
- training and assisting users in microscope operation
- in collaboration with researchers or engineers, analyzing future experimental requirements and developing original operation methods
- participating in the maintenance and regular monitoring of the microscopes' performance in co-ordination with both the manufacturer (NION) and the local users
- disseminating and highlighting the experimental results obtained via written reports, publications and/or communications
- keeping abreast of developments in aberration-corrected and monochromated microscopy and spectroscopy
- preparing high-quality thin samples for corrected microscopy and spectro-microscopy (atomically resolved EELS) using a dual-beam FIB.

**Skills:**

- advanced theoretical and practical knowledge in physics, materials science, instrumental techniques and materials characterization
- technical expertise in aberration-corrected STEM (imaging and EELS).
- basic knowledge of electron optics and image simulation and EELS analysis software
- ability to prepare thin samples adapted to particular electron microscopy experiments
- ability to work in a team and to acquire the multidisciplinary skills necessary for efficient project execution
- competence in oral and written English (European level B1/B2).

**Context:**

The Laboratoire de Physique des Solides is a CNRS-Université Paris-Sud Joint Research Unit employing about 240 people. It is located in Orsay (91) in a scientific and technological environment on the Saclay Plateau. Its scientific activities cover a wide field of condensed matter physics, reaching and crossing the interfaces between several disciplines.

The STEM team is a world-renowned group specializing in the development of new spectro-microscopies and their use in the study of various nanomaterials and their properties (functional oxides, graphene analogs, plasmonic nanoparticles...). The microscope suite includes two latest-generation STEMs, including the world's first and so far only NION HERMES 200 CHROMATEM microscope with unprecedented capabilities (reception in the autumn of 2017). This unique environment attracts a large number of external users who perform experiments with the group's help and collaboration.

The successful candidate will be responsible for the microscopy platform, especially the two latest-generation microscopes, as well as the sample preparation room. Within the group, this will require close co-operation with the two other team engineers for the development and maintenance operations, and in general with the team's microscope users. In the context of the international platform it will also involve close interaction with the external users. The engineer will be under the responsibility of the STEM group leader.