



ENGINEER SPECIALIZED IN INSTRUMENTATION USING CHARGED PARTICLE BEAMS (M/F)

Fixed term contract | 24 months | Fulltime/40h | Belvaux

Context

As a key player in research and innovation in Luxembourg, the Luxembourg Institute of Science and Technology (LIST), with its employees, is active in the domains of materials, the environment and IT. As an RTO (Research and Technology Organisation) and with its interdisciplinary impact-driven approach, LIST contributes to the development of Luxembourg's economy and society.

The Materials Research and Technology Department (MRT) translates cutting-edge materials research into applicable technology, with about 180 collaborators. For this, the department cultivates close relationships and joint projects with both academic and industrial partners, and contributes to Luxembourg's and Europe's innovation agenda in Materials Research and Technology.

The Advanced Instrumentation for Ion Nano-Analytics (AINA) group of the MRT department at LIST focuses on the development of scientific instruments based on charged particle beams for nano-imaging and nano-analysis and correlative workflows taking advantage of these instruments. We are a multi-disciplinary team giving the group the complete spectrum of know-how that is required to convert innovative ideas and concepts into prototype instruments. During the past few years we have been developing in particular a Secondary Ion Mass Spectrometry (SIMS) add-on system for DualBeam Instruments (FIB-SEM), the Helium Ion Microscope (HIM) and for a Transmission Electron Microscope (TEM) as well as an Atomic Force Microscopy (AFM) system that we integrated into our NanoSIMS, allowing the advantages of high spatial resolution and high sensitivity chemical information to be combined.

Description

We are looking for an engineer specialised in charged particle beam instrumentation with a strong background in signal acquisition and treatment as well as in instrument interfacing from an electronics and software point of view. The candidate will participate in several existing projects focussing on new methodologies and prototype instrumentation combining techniques such as SIMS, TEM, HIM, SEM and AFM as well as other project activities in the fields of nano-analytics but also mass spectrometry for space applications. The responsibilities of the engineer will include:

- testing and calibrating the group's (prototype) instruments
- determining and checking the performance specifications of the (prototype) instruments (including from time to time at partner/customer sites)
- preparing test benches
- preparing experiments by interfacing sub-systems (e.g. mass spectrometers, ion columns, detectors, etc.) on instruments and test benches (e.g. checking the software communication between all components, check-up of the complete system, etc.)
- coordinating the compliance aspects related to the prototype instruments developed by the AINA group
- supporting the lab managers and the tool owners
- writing reports and technical documentation and participating in disseminating, valorising and transferring RDI results (patents, licenses, prototypes, publications, technical reports, etc.)

Job reference: MRT-2019-056

Application file:

- A CV
- A motivation letter

Apply online: [MRT-Job offer](#)

Your working environment

The research department

The Materials Research and Technology department (MRT) focuses on two key enabling technologies: nanotechnologies and advanced materials, and investigates research questions related to transducing materials and actuators, photocatalysis and energy harvesters, transparent electronics and smart nanocomposites, point-of-care and drug delivery, modelling and design of structures and multifunctional composites, bio-based polymers and composites, adhesion and compatibilization of fibres/matrix, process engineering and advanced manufacturing.

> [LIST.lu/MRT](#)



Profile

Education

- Engineer degree in scientific instrumentation, electronics, mechatronics or a related field

Required seniority

- The positioning within LIST's grid will be based upon the experience of the candidate

Competencies

- Know-how in scientific instrumentation using charged particle beams
- Strong background in signal acquisition and treatment
- Strong background in instrument interfacing from an electronics and software point of view
- Experience in prototype instrumentation (operation and RDI cycle related to instrument development)
- Basic experience in charged particle optics is an asset
- Basic experience with mechanical and/or electrical CAD software will be an asset in order to be able to read and understand technical drawings and documentation
- Hands-on experience with materials science characterization tools (e.g. Secondary Ion Mass Spectrometry (SIMS), Scanning Electron Microscopy (SEM), Focused Ion Beam instrumentation (FIB), Transmission Electron Microscopy (TEM), etc.) will be an asset
- Excellent communication, flexibility, organizational and interpersonal skills with team-oriented mind-set

Language

- Fluent in English (both oral and written)
- Knowledge of Luxembourgish, French or German will be an asset

The Luxembourg Institute of Science and Technology (LIST) is a mission-driven Research and Technology Organisation (RTO) that develops advanced technologies and delivers innovative products and services to industry and society. Located at the heart of Luxembourg's vibrant Research and Innovation Campus in Esch-Belval, LIST can ideally connect its over 500 specialists in materials, the environment and IT with virtually all of Luxembourg's other main research players such as the University of Luxembourg, LIH, LISER, Technoport, Luxinnovation and the National Research Fund. **LIST.lu**

The LIST is committed with equality of opportunities and gender balance