



POST-DOCTORAL RESEARCHER POSITION FOR “IN SITU CORRELATIVE CRYO-ELECTRON TOMOGRAPHY AND MASS SPECTROMETRY APPLIED TO LIPIDS DURING VIRUS-HOST INTERACTION” (M/F)

Fixed term contract (36 months) | Fulltime/40h | Belvaux

Your work environment

The Luxembourg Institute of Science and Technology (LIST) is a Research and Technology Organization (RTO) active in the fields of materials, environment and IT. By transforming scientific knowledge into technologies, smart data and tools, LIST empowers citizens in their choices, public authorities in their decisions and businesses in their strategies.

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You will be part of the LIST Materials Research and Technology department

Through its research into advanced materials and processes, the department, with over 190 researchers and engineers, contributes to the emergence of enabling technologies that underpin the innovation processes of local and international industry. The department's activities hinge on four thematic pillars supported by dedicated platform specialists as below:

- nanomaterials and nanotechnology
- scientific instrumentation and process technology
- structural composite materials and manufacturing and functional polymer unit

The Advanced Instrumentation for Ion Nano-Analytics (AINA) group within the Scientific Instrumentation and Process Technology (SIPT) unit of MRT is renowned for developing innovative nano-analytical techniques for materials characterization and life science applications. During the past few years, we have been developing in particular a Secondary Ion Mass Spectrometry (SIMS) add-on system for the Helium Ion Microscope (HIM), the Focused Ion Beam Scanning Electron Microscope (FIB-SEM) and for a Transmission Electron Microscope (TEM), allowing the advantages of high spatial resolution with high sensitivity chemical information to be combined for nano-analytics. This HIM-SIMS meanwhile also allows for the investigation of material and life science samples under cryo conditions.

What you will be doing

In this context, we are launching the project “*In situ* correlative cryo-electron tomography and spatial lipid mapping of Influenza A virus infected cells”, which is in cooperation with the Virology Department at the University Hospital Heidelberg in Germany (“Membrane Biology of Viral Infection” Group headed by Dr. Petr Chlanda). The interplay between the lipid membrane of an infected host cell and the virions plays an important role in the replication cycle of the influenza A virus (IAV) and will be further investigated here with the highest possible spatial resolution for lipid distribution.

Job reference: MRT-2020-034

Application file:

- A CV
- A motivation letter
- References names of two or three referees

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Your working environment

The research department

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The successful candidate will be working on the implementation of a novel cryo-workflow to investigate respective lipid translocations in the host cell and budding virions by means of cryo-HIM-SIMS(=CETSIMS). He or she will work with highly skilled scientists and engineers in the dynamic environments of the AINA group where he/she will acquire highly valued skills in the application of advanced microscopy and nano-analytical techniques as well as working with prototype instruments. The PostDoc will take a main role in the microstructural and chemical characterization of frozen biological samples from this project and those closely related to the topic. He or she will coordinate the local research efforts together with input from the German project partner. In consultation with the project leader, the candidate will design respective workflows, perform relevant experiments, analyse and interpret the results and disseminate the results in international conferences and peer-reviewed publications. In addition, the candidate will contribute to securing novel intellectual property originating from this project.

Which profile we are looking for

The candidate should have an excellent PhD degree in the field of Life Science, Biology, Biochemistry, Chemistry or Physics or closely related fields and have a strong interest in working with prototype instruments for biological materials analysis.

- Experience in microscopy and/or imaging mass spectrometry applied to life sciences (e.g. Secondary Ion Mass Spectrometry (SIMS), Scanning Electron Microscopy (SEM), Focussed Ion Beam instrumentation (FIB), Transmission Electron Microscopy (TEM), correlative light and electron microscopy (CLEM), etc.)
- Experience in sample preparation for microscopy in biological applications. Especially knowledge of cryo-workflows or virological samples would be an asset
- Experience in developing and using correlative workflows, data processing and data visualisation, including methodologies and algorithms for image fusion and co-registration
- Experience in writing, first authoring of publications
- Interest in setting-up new academic and industrial collaborations
- Interest in working with prototype instrumentation
- Excellent communication, flexibility, organizational and interpersonal skills with team-oriented mind-set
- Fluency in English is mandatory. Knowledge in at least one of the official languages of Luxembourg (French, German or Luxembourgish) is an asset

Interested ? Please apply online

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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