

Up to 1 year full time post doc job offer at Mass Spectrometry Laboratory (MSLab), University of Liege for the characterization of therapeutics oligonucleotides by mass spectrometry

The MSLab is a research group in the Molecular System (MolSys) research unit focusing on the extensive use of mass spectrometry and hyphenated techniques in the fields of proteomics and omics, persistent organic pollutants, analytical chemistry, mass spectrometry imaging, and physical chemistry.

The MSLab is the largest academic mass spectrometry facility in Belgium. Several FT-ICR, Orbitrap, time-of-flight, quadrupoles and ion traps, and ion mobility are available in the lab with a large panel of upstream separation technique available. A highly customized native ion mobility mass spectrometer is also available for specific topics under development in the lab.

Liège is in the French speaking area in the south of Belgium, near to the limits with the Netherlands and Germany.

The MSLab cover several fields of mass spectrometry through the different teams working in collaboration. One of this team is the MSLab FUN group focusing on fundamentals and innovative method development in mass spectrometry and ion mobility mass spectrometry.

Please feel free to visit our website for more information about us : www.mslab.uliege.be

One of our current project, *VLAIO ROAD* (robust oligonucleotides analysis development) concerns the development of methods for the characterization of chemically modified therapeutics-like oligonucleotides, in collaboration with Janssen Pharmaceutica, a major Belgian pharmaceutical industry in Flanders (Northern part of Belgium), and the Vrije Universiteit Brussel in Flanders.

We are looking for a full time 1 year* post doctoral candidates to work on at least one of the work package due in the *VLAIO ROAD* project.

Depending on the motivation and the applicant profiles, the tasks are either:

- Investigate the potential of electron driven fragmentation methods, especially electron capture dissociation performed on negative ions – also known as Negative-Ion Electron Capture Dissociation (niECD) - for the sequencing and the characterization of chemically modified therapeutics-like RNA (ribonucleic acids). This task will be done on different instrumentation available in our lab such as a solarix xR 9.4T (FT-ICR MS) with electron capture dissociation (ECD) capabilities, and/or our customized Synapt G2S fitted with an ECD cell (implemented in the transfer cell). The candidate will also investigate the fragmentation patterns of the same chemically modified RNA obtained after electrospray ionization in positive ionization mode or MALDI (in positive and negative ionization modes). Collaboration with other members of the MSLab FUN team developing the sequencing of such RNA using MALDI in-source decay is possible.

For this project, the candidate need to have a strong background in mass spectrometry and electron driven dissociation. Background in oligonucleotides is an asset.

- Screening of the higher order structures of chemically modified RNA, either in solution using capillary electrophoresis and kinetic capillary electrophoresis coupled to (ion mobility) mass spectrometry, either by applying collision induced unfolding on ions obtained by electrospray ionization in positive and negative mode. For these purposes, several Synapt G2 series ion mobility mass spectrometers are available as well as timsTOF instruments. 2 Beckman Coulter (now SCIEX) CE instruments are available with CEMS interfaces : the P/ACE MDQ and the CESI8000 instruments.

For this project, the candidate have to be familiar with capillary electrophoresis (CEMS is an asset). Strong interest for mass spectrometry is requested. Also background in collision unfolding is a serious asset.

* The duration of the post doctoral position cannot exceed the funding period of the *VLAIO ROAD* project. See the section for details

Duration:

6 months +6 additional months extension possible depending on the starting date of the candidate.

Salaries:

The gross salaries is planned to be 5000 € per month, depending on your marital status. E.g. bachelors would get around 50% charged from gross salaries due to taxes and social contributions.

Estimate your net salaries here (FR or NL): <https://hrcalculations.securex.eu/gross/details>

Location:

Mass Spectrometry Laboratory at the University of Liège (Sart Tilman) in Belgium.

Tasks:

Sequencing of chemically modified RNA using electron driven fragmentation methods, and/or screening of the higher order structures in solution and/or the gas phases by capillary electrophoresis coupled to (ion mobility) mass spectrometry and by collision induced unfolding using ion mobility mass spectrometry.

Publication of at least one article in a moderately high impact factor journal is requested. The MSLab FUN team has already published plenty of papers in journals such as Analytical Chemistry or the Journal of American Society of Mass Spectrometry (JASMS).

Skills:

The candidates need to have strong background in fundamentals and application of ion mobility coupled to mass spectrometry. Background in oligonucleotides by MS is an asset.

Mastering the Waters and/or Bruker software are also assets. Scripting with e.g. Python and mzML libraries is an asset.

Communication skills in English (speaking and writing) is requested. Nevertheless French speakers candidates are allowed to speak French in their current work days with the members of the MSLab.

Interview:

According to the current position of the candidates, interview would be done either in face-to-face, either remotely using Microsoft Teams, in French or in English. The lab header and the two principal investigators implied in the project will be present during the interview.

Starting your job:

The candidate is expected to start as soon as possible. This would be discussed during the interview for the selected candidates. Contract is for 6 months, extension of 6 months possible if the end of the contract does not exceed the end of the funding period of the *VLAIO ROAD* project.

Submitting your interest and contact points:

For further information, or submit your C.V and your proposal, please send an email in Cc to Pr. Gauthier EPPE (lab header), Pr. Emeritus Edwin DE PAUW (former header, principal investigator and scientific advisor), and Dr. Johann FAR (principal investigator) at the following addresses (full email addresses are available in the Uliège website at www.uliege.be/cms/c_9054334/en/directory):

- g.eppe at uliege dot be
- e.depauw at uliege dot be
- johann.far at uliege dot be

The candidates will use proper precaution to avoid their proposal to be discarded by the Spam filters.

Practical information, local support and living in Liège:

Liège is hosting plenty of foreigner students. Practical information about living in Liège can be found here: www.enseignement.uliege.be/cms/c_13171713/en/prospective-student-welcome-to-the-university-of-liege

While this is not your exclusive source of information, the following link can guide you for finding residence in Liège: www.campus.uliege.be/cms/c_9038340/en/in-liege