LIÈGE université ViBra-Santé Hub CIRM

LIÈGE université RSU Chemometrics CIRM

THREE-YEAR POSTDOCTORAL POSITION

PHARMACEUTICAL PRODUCT QUALITY CONTROL WITH HANDHELD NIR SPECTROSCOPY

AREA: ANALYTICAL CHEMISTRY / PHARMACY

START DATE: 01/01/2025

DEADLINE: POSTION REMAINS OPEN UNTIL FILLED

Located in the French-speaking part of Belgium, the University of Liège welcomes nearly 27,000 students of 123 different nationalities in a dynamic, multicultural city less than an hour away from Brussels and Cologne, two hours from Paris and three hours from London and Amsterdam. ULiège is spread across 4 campuses and boasts over 5,700 staff members, including 3,600 teachers and researchers active in all areas of the humanities and social sciences, science and technology, and health sciences.

As a key player in social change and environmental awareness, ULiège promotes ethical, transdisciplinary and open science. It contributes to the socio-economic development of its region through numerous partnerships with several institutions, including the university hospital (CHU). Given its international orientation, the University participates in the European University of Post-Industrial Cities (UNIC) initiative and has one of the most extensive collaborative networks in the world.

ULiège offers attractive career prospects in a high-quality working environment where well-being, diversity and equality of opportunity are promoted. Since 2011, ULiège has been proud to display the European *Human resources strategy for researchers* (HRS4R) label, which reflects its commitment to open, transparent and merit-based procedures. In addition, it upholds quality and diversity in line with the recommendations of the *Coalition for Advancing Research Assessment* (CoARA). ULiège encourages its academic staff to travel internationally and welcomes international researchers through its EURAXESS center.

ABOUT THE RESEARCH PROJECT

Falsified and substandard medicines represent approximately 10% of the global pharmaceutical market. Rapid detection of these products at various stages of the supply chain is essential for ensuring high-quality healthcare. In this context, the use of handheld near-infrared spectrophotometers offers a promising solution due to their low cost, versatility, and low environmental impact. A major limitation to their widespread application is the lack of a reference spectral database.

The project aims to collaborate with international partners to develop a robust spectral database, alongside establishing standardized protocols for sampling, spectrum measurement, and chemometric analysis. The project will also address the transfer of spectral data and chemometric models between different portable devices. Ultimately, the project aims to enable field operators to quickly and reliably assess the presence and quantity of active ingredients in a wide range of essential medicines.

JOB DESCRIPTION

The Laboratory of Pharmaceutical Analytical Chemistry of the University of Liege is offering a position as postdoc to a creative enthusiastic researcher.

The postdoc will be in charge of:

- Handling of near infrared (NIR) spectra of pharmaceutical solid dosage forms acquired in the field using different handheld systems
- Coding qualitative (API identification) and quantitative (API quantitation) analyses
- Developing strategies for model transfer between different equipment and environmental conditions
- Integrating scripts in the information system
- Supervising field-testing activities

SPECIFIC DUTIES AND ACTIVITIES

- Create analysis workflows (pipelines) for the analysis of NIR spectra of pharmaceutical solid dosage forms
  - One-class classification models
  - Regression models
- Develop calibration transfer strategies between different instruments and environments
- Help integrating the developed pipelines in an information system developed by other partners of the project
- Undertake missions abroad in partner institutions (especially in Benin for field testing)
- Communicate findings through participation in international conferences and contributions to scientific publications

PROFILE

- **REQUIRED SKILLS :**
  - PhD in chemometrics, analytical chemistry, vibrational spectroscopy or an equivalent

- Expertise in advanced multivariate data analysis and calibration transfer
- Knowledge of Near Infrared spectroscopy
- Experience in coding/scripting in R or Python

- **DESIRABLE SKILLS :**
  - Knowledge/experience in the pharmaceutical environment and regulations
  - Previous experience in quality-controlled environment (e.g. ISO17025, GMP)
- **HUMAN SKILLS :**
  - Ability to work collaboratively within an international team environment.
  - Strong capacity for autonomously working and delivering results within deadlines
- **LANGUAGES :**
  - Written and spoken scientific English
  - French - Intermediate level B2, reading, writing and speaking

TERMS OF EMPLOYMENT

- **TYPE OF CONTRACT:**
  Appointment to the post-doctoral position requires that the applicant has a PhD within the position's specifications at the time of employment decision. The doctoral degree should have been obtained no more than 10 years before the start of the position. Notably, the candidate should be in a situation of international mobility: he/she should not have worked or lived in Belgium for more than 24 months during the three years preceding his/her start date.

- **WORK SCHEDULE :**
  Full-time; 38 hrs/week
- **CONTRACT DURATION :**
  Max 3 years
- **EXPECTED START DATE :**
  1st January 2025

OUR OFFER

With your career path and personal details, ULiège Human Resources Department can assess the gross monthly salary. Employment benefits such as reimbursement of public transportation fees and access to a variety of training opportunities are also included.

- **WORK ENVIRONMENT**

The research team of the laboratory of Pharmaceutical Analytical Chemistry (LPAC) currently includes two Professors (Philippe Hubert and Eric Ziemons), one research logistician, one post-doctoral researcher, four PhD students and four technicians.

The LPAC has an internationally recognized expertise in:

- Vibrational spectroscopy and hyperspectral imaging
- Robust optimization, validation, transfer of analytical methods

- Separative techniques
- Development of analytical methods based on near infrared and Raman handheld spectroscopy to fight against falsified medicines

The work will be performed in collaboration with the Research Support Unit in Chemometrics of the Center for Interdisciplinary Research on Medicines (Dr. P-Y Sacré).

For more information about the publications of LCAP and RSU in chemometrics, visit: https://tinyurl.com/LCAP-RSUc-publications

HOW TO APPLY?

Applications must be sent to the following address: eziemons@uliege.be, quoting the reference "Postdoc candidate – NIR4MED".

Applications should include*: (*application can be sent in English or in French)

- Cover letter describing your motivation for the position (max 1 page),
- Curriculum Vitae,
- Diplomas and grades,
- Names and contact details of referees,
- Complete publication list,
- Separate reprints of particularly relevant papers.

SELECTION PROCEDURE

- The selection will be based on the application files and the candidate's suitability for the position.
- Pre-selected candidates will be interviewed in person or via Teams.

Our corporate policy is based on diversity and equal opportunity. We select candidates on the basis of their skills and do not discriminate on grounds of age, sexual orientation, origin, beliefs, disability or nationality.

CONTACT DETAILS

Informal inquiries about the project are welcome. Please feel free to contact Prof. Eric Ziemons by email eziemons@uliege.be or Dr Pierre-Yves Sacré by email pysacre@uliege.be.

Release date: 15 November 2024

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Privacy policy

Personal data collected following your application will be processed by Eric Ziemons and Pierre-Yves Sacré of the University of Liege for the sole purpose of recruitment.

The data will be processed within the framework of pre-contractual measures (art. 6-1, b. of the General Data Protection Regulation) and kept for up to 9 months after the publication of the vacancy. Your personal data will not be passed on to any third parties.

In accordance with the provisions of the GDPR (EU 2016/679), you may exercise your data protection rights (right of access, rectification, erasure, restriction, and portability) by contacting ULiège Data Protection Officer (dpo@uliege.be - Mr. Data Protection Officer, Bât. B9 Cellule "GDPR", Quartier Village 3, Boulevard de Colonster 2, 4000 Liège, Belgium). You may also lodge a complaint with the Data Protection Authority (https://www.autoriteprotectiondonnees.be , contact@apd-gba.be).