

PhD position in Analytical Chemistry / Multi-Dimensional Liquid Chromatography

Vrije Universiteit Brussel (www.vub.ac.be) is an internationally oriented university in Brussels, the heart of Europe. Through tailor-made high-quality research and education, VUB wants to contribute in an active and committed way to a better society for tomorrow.

The PhD student will be working in the Eeltink research group in the Department of Chemical Engineering at the Vrije Universiteit Brussel. The main research themes of the group are *i*) Advancing fundamentals of separation science, *ii*) design and development of functionalized monolithic nanomaterials, *iii*) Realizing novel concepts via microfluidic solutions, and *iv*) Developing UHPLCⁿ-MS/MS workflows in support of medical diagnostics.

PhD research project:

Multi-dimensional LC methods are especially suitable for the characterization of macromolecules, such as (bio-)polymers and proteins. The PhD project aims at realizing a novel microfluidic modulator chip containing parallel trap segments for sample transfer between columns in a 2D-LC set-up. Such high-tech modulator chip allows to decouple the separations in different dimensions, with the aim to alleviate constraints and allow optimal conditions in each dimension independently. To enhance the detection sensitivity and extent the possible column combinations the incorporation of nested monolithic nanomaterials in the trap segments will be pursued. Furthermore, to mediate the content of organic modifier in the mobile phase, the functionality of the mixer can be enhanced by adding a mixer on-chip. In a later stage, enzymatic microreactors modulator chips will be created for the top-down analysis of biotherapeutics.

Results will be presented at conferences and published in international journals. The PhD student is expected to complete the PhD thesis within 4 years. In addition, the PhD student will contribute to the education program of the university. A research internship is foreseen in the Analytical Chemistry group at the University of Amsterdam of Professor P.J. Schoenmakers

Collaboration with industry:

A multi-disciplinary research team from industry and academia has been formed that has complementary capabilities and brings together unique knowledge on separations science, chips technology, mass spectrometry, and applications. The PhD student will work closely together with the Schoenmakers team of the University of Amsterdam and will also conduct research internships within the research labs of Janssen Pharma (BE) and Abundnz (NL). Other industry partners include the Research Institute of Chromatography (RIC, BE), DOW Benelux (NL), and DSM (NL).

Admission requirements:

- MSc degree in the field of (Bio)-Analytical Chemistry.
- Strong background and interest in separation science, and life-science research.
- Strong interest in chip technology.
- Very good knowledge in spoken and written English.

Interested?

Please send you application letter including your motivation, your CV and grade list, and two letters of recommendation by email to: Prof. Dr. S. Eeltink (seeltink@vub.be). (Closing date for application is 31th of January 2018).