

## PostDoc – Multicomponent Spectroscopy (m/f/d)



### INVITE

**Innovation** is what drives us. As a non-profit research organization, we develop groundbreaking technologies with our interdisciplinary team that shape the future – and create added value for society.

Our **Vision** is to achieve substantial things through strong partnerships. Together with our broad network of scientific and industrial partners, we create synergies from which everyone benefits.

**Technology** is our passion, and we love to share it. Through research on industry-relevant scientific questions and further education, we prepare the next generation for the challenges of the future.

For a 2-years industrial collaboration project on the topic of “Multicomponent Spectroscopy” we are looking for you:

### Your tasks and responsibilities

The main goal of the Postdoc-project is the development of robust quantitative calibration methods for spectroscopic PAT in complex multicomponent mixtures. In the course of the project, you will evaluate if a methodology based on blind-source separation (BSS) methods, developed by the Grover and Rousseau Group at Georgia Tech to monitor nuclear waste in aqueous media, is applicable (with appropriate modifications) to monitor organic active ingredients and solvent mixtures for industrial applications.

Amongst others, your task will include:

- Definition of a) tolerance criteria for peak similarity, b) separation and calibration accuracy c) maximum tolerance level of noise/minimum signal intensity (SNR), d) experimental protocol for implementation in an industrial setting
- Testing of the protocol on two systems of moderate complexity (<10 relevant species) with one (or more) relevant spectroscopic method (IR, Raman, UV).
- Development of a protocol for complex cases (large number of components, or low detection limits) by coupling techniques. Investigation of the applicability to solid state samples and extension to non-spectroscopic methodology (e.g. XRPD) and possible applicability to drug product needs.
- Report writing and estimation of costs for typical scenarios during development and manufacturing phases.

### What you bring with you

- PhD in chemical engineering, chemometrics, pharmaceutical science or related disciplines
- Sound knowledge in fundamental linear algebra and good general education in applied mathematics, proven and hands-on experience in coding (ideally but not necessarily in Python), and previous exposure to spectroscopic methods in the lab
- You are taking the initiative, and you have an independent, goal-oriented way of working
- You enjoy working in an interdisciplinary team in a cross-functional setup
- You like to handle scientific challenges. Moreover, you have a high ability to structure complex tasks and come up with unconventional, inspiring ideas to solve problems
- You are a team player with strong communication skills, characterized by a high level of commitment and enthusiasm for continuous learning and hands-on bench work
- Good knowledge of the common MS Office applications
- Fluent English in speaking and writing (knowledge of German or willingness to learn it is advantageous, but will not constitute a discriminant factor)

### What you will take with you

- The work will provide you with insight into scientifically and industrially relevant challenges in the life science and agrochemical industry.
- You gain experience in working in direct interaction with industrial partners and in an international cross-disciplinary team at INVITE.
- The work offers you the opportunity to contribute creatively to the development of new scientific topics.

### Contact person

Please, send your complete application documents to Ildikó Terebesi ([terebesi@invite-research.com](mailto:terebesi@invite-research.com)).