invite a public private partnership between BAYER, technische universität dortmund, hhu Heinrich Heine Universität Düsseldorf

PostDoc – Chemical Reaction Optimization & Catalysis (m/f/d)

INVITE GmbH is a research center for innovative production technologies and a private public partnership between **BAYER AG, Technical University Dortmund** and **Heinrich-Heine-University Düsseldorf**.

For a 2-years industrial collaboration project on the topic of **"Chemical Reaction Optimization & Closed-Loop Automation"** we are looking for you.

In this PostDoc position, you will contribute to advancing experimental technologies for the investigation and optimization of reaction conditions in pharmaceutical process development in collaboration with Bayer AG in Wuppertal, with a particular focus on catalytic transformations and challenging chemistry. You will apply your expertise in synthetic organic chemistry, catalysis and reaction optimization in combination with state-of-the-art laboratory automation and data-driven optimization approaches. By developing robust automated experimental workflows and systematically generating and interpreting high-quality reaction data, you will contribute to deeper reaction understanding and more efficient reaction optimization. Building on these applications, you will help expand the chemical scope and capabilities of the technology and contribute to its further development toward autonomous reaction optimization. Your work will be guided by current and future challenges in pharmaceutical chemical development, helping to shape enabling technologies for the development of robust processes for drug candidates.

Your tasks and responsibilities

- Investigate and optimize synthetically relevant reactions using state-of-the-art laboratory automation, with a particular focus on catalytic transformations and challenging reaction systems
- Design, execute and interpret reaction optimization experiments based on a strong understanding of organic chemistry, catalysis and reaction mechanisms in synergy with modern-data driven reaction optimization algorithms.
- Apply advanced experimental technologies to generate high-quality reaction data and derive a deeper understanding of relevant reaction parameters
- Establish and evaluate chemical applications using automated laboratory technologies
- Expand the chemical scope and capabilities of these technologies, considering current and future needs of chemical development
- Work closely with chemists, automation specialists and digital experts to translate chemical workflows into robust automated experiments
- Contribute to the continuous improvement of automated and data-driven reaction optimization workflows and their integration into the digital laboratory environment
- Support the development toward autonomous reaction optimization

What you bring with you

- PhD in organic or metal-organic chemistry, digital chemistry, or comparable scientific education.
- Strong background in synthetic organic chemistry and practical experience in reaction development and optimization
- Interest in laboratory automation, digitalization and data-driven experimentation
- Experience in catalysis, ideally including the development or optimization of catalytic transformations
- Practical experience with air- and moisture-sensitive chemistry and glovebox techniques is highly desirable
- Strong ability to interpret experimental results, identify chemical trends and derive subsequent experiments based on mechanistic and chemical understanding
- Experience with programming, data analysis or digital laboratory tools is an advantage, but not a prerequisite
- Independent and goal-oriented way of working and enthusiasm for interdisciplinary collaboration
- Strong communication skills and good written and spoken English

What you will take with you

- Gain hands-on experience in state-of-the-art reaction optimization, combining chemical expertise with modern automation, digital and data-driven technologies
- Contribute to shaping the future of reaction optimization by developing new approaches toward increasingly integrated and autonomous experimentation
- Gain insights into pharmaceutical development and holistic reaction optimization, and how these approaches can enable robust process development
- Work in a highly interdisciplinary environment at the interface of chemistry, automation, digital technologies and IT, collaborating with chemists, automation engineers and data scientists
- Develop a unique skill set combining synthetic chemistry, reaction optimization and emerging digital laboratory technologies

Start: January / February 2027

INVITE GmbH strives for a gender-equitable employment structure and therefore expressly welcomes applications from women.

Contact person

Please, send your complete application documents to **Dr. Carl-Helmut Coulon** (Coulon@invite-research.com) and **Dr. Jan-Olav Henck** (henck@invite-research.com)