

# JOB POSTING

**Recruiting organisation:**

University of Chemistry and Technology, Prague  
Laboratory of Molecular Electronics and Smart  
Materials

**Subproject title:**

Sensors for Microfluidic Electrochemical Cells

**Starting date:**

1st September 2023

**Salary:**

The Doctoral Network "MiEI" is financed by the European Union under the framework of the program HORIZON Europe, Marie Skłodowska-Curie Actions. The doctoral candidate will be hired full-time for 36 months under contract by University of Chemistry and Technology, Prague, with a monthly gross salary of approx. 2450 € (including mobility allowance, but excluding other allowances that depend on eligibility, e.g. family allowance, special needs allowance).

---

**Background information:**

---

Marie Skłodowska-Curie Doctoral Networks are joint research and training projects funded by the European Union. Funding is provided for doctoral candidates from both inside and outside Europe to carry out individual project work in a European country other than their own. The training network "MiEI" is made up of 10 partners, coordinated by Fraunhofer ICT in Germany. The network will recruit a total of 12 doctoral candidates for project work lasting for 36 months.

New industrial production strategies like "production on demand" and "Industry 4.0" are increasing the demand for new digital concepts for the chemical industry that are easily scalable and can work like a construction kit. In addition, the reduction of fossil fuel consumption requires novel synthesis concepts with on-demand capabilities paired with the use of electrical

energy as a primary source for chemical processes.

MiEI will address this demand from the chemical industry, combining the advantages of electrochemistry, micro process engineering and flow chemistry. The recruited researchers will explore new models for electrodes and electrochemical flow cells, and develop innovative integrated prototype cells using printed circuit board (PCB) technology as a mass-scalable and flexible tool. These cutting-edge technologies will be applied to promising fine chemical and pharmaceutical synthetic routes, which will be further accompanied by techno-economic evaluation defining new business opportunities. The new MiEI technologies and processes will allow safe, flexible and sustainable synthetic routes for the chemical industry of the future.

---

**Job description:**

---

The advertized subproject is fully funded by the Marie Skłodowska-Curie European Training Network „MiEI“. It will be carried out by one doctoral candidate at University of Chemistry and Technology, Prague (UCT Prague) over a period of 36 months. The doctoral candidate will be enrolled in a PhD programme Measurement and Signal Processing in Chemistry at the Faculty of Chemical Engineering.

The PhD research will be carried out under the supervision of assoc. prof. Dušan Kopecký. The research work aims at obtaining of accurate process information for feedback control and finding of boundary conditions of the microfluidic electrochemical cells used in the production of fine chemicals and pharmaceuticals. The main activities include 1) identification of process and ambient conditions, 2) concept of sensors integration into cell, 3) selection of a suitable sensor principle and design, 4) testing of sensors, data acquisition and feedback evaluation and 5) signal processing and statistical evaluation.

As part of the research, a 3-month secondment will take place at University of Continuous Education – Danube University in Krems, Austria.

---

**Benefits:**

---

The recruited researcher will have the opportunity to work as part of an international, interdisciplinary team of 12 doctoral candidates, based at universities and industrial firms throughout Europe. She/he will be supported by two mentors within the MiEl project, and will have multiple opportunities to participate in professional and personal development training. Through her/his work she/he will gain a unique skill-set comprising electrosynthesis, flow chemistry and process analytical technologies, as well as modern control engineering techniques. She/he is expected to finish the project with a PhD thesis and to disseminate the results through patents (if applicable), publications in peer-reviewed journals and presentations at international conferences.

UCT Prague is one of the largest higher education institutions devoted to teaching and research in a wide range of chemistry areas, including measuring and control engineering for chemical, food and biotechnological industry. The host group Laboratory of Molecular Electronics and Smart Materials deals with the research and development in the field of organic electronics, sensors, and energy storage devices. The recruited researcher will be enrolled in a PhD programme at the Faculty of Chemical Engineering, one of the four UCT faculties, and employed full-time for 36 months in the framework of the MiEl project. The employment contract includes 40-hour working week, flexible working hours, 6 weeks of vacations, meals allowance, access to in-house language courses and also to institutional childcare. Assistance with relocation and other formalities is provided by experienced staff of the Welcome Center. UCT buildings, including labs, are located in the city of Prague, with excellent transport connection to the city center (3 metro stations off the Old Town) and the airport.

---

**Requirements:**

---

**Qualifications / experience:**

Candidates meeting the following requirements will be considered for the position:

- must NOT yet have a PhD, in accordance with the European Union's funding rules for doctoral networks;
- must be in possession of a degree allowing for enrollment in a PhD programme, at the latest on the expected starting date of employment;
- degree in Chemical Engineering (preferably specializing in Process Engineering, Measuring and Control Engineering or similar), Cybernetics or Electronics (preferably Measuring Technique, Sensors or similar)
- knowledge of electrochemistry and electrochemical and microfluidic processes is an advantage
- experience with Printed Circuit Board technology (e.g., within own hobby projects) is an advantage
- DIYers and tinkerers are welcome (presentation of previous own hobby projects from electrical/measuring and control engineering, physics or chemistry and similar is an advantage)
- knowledge of programming languages (e.g., Python, Matlab, LabVIEW, etc.) is an advantage
- very good command of written and spoken English
- motivation, communication and cooperation skills, pro-active and responsible attitude

**Mobility:**

The applicant must not have resided or carried out her/his main activity (work, studies etc.) in the Czech Republic for more than 12 months in the past 3 years.

---

**How to apply:**

---

Please send the following in a single pdf file, by e-mail to [kopeckyd@vscht.cz](mailto:kopeckyd@vscht.cz) and also in CC to [koneckaa@vscht.cz](mailto:koneckaa@vscht.cz), quoting the reference "PhD position MiEI" in subject of the email:

1. CV providing details of your education and research interests, 2 reference contacts and, if applicable, also any professional experience, contribution to publications and other relevant achievements;
2. Motivation letter of max. 1 page, covering the reason for application, relevant skills and abilities, professional interests and expectations;
3. Descriptions or hyperlinks to previous own hobby projects (e.g., YouTube videos, blog, etc.) from electrical/measuring and control engineering, physics, or chemistry can be added to the motivation letter. This is optional but advantageous.

**Application deadline:** 19<sup>th</sup> March 2023

Online interviews will be held with shortlisted candidates in March 2023. All candidates will be informed about the outcome of the preselection. A second round of interviews may be organized with selected candidates.

*By providing your personal data in your application, you give consent to the University of Chemistry and Technology Prague to process and file the provided documents for the purposes of this selection procedure. At the same time you confirm that your personal data in the submitted documents is true and accurate.*