**Unit**: International Centre for Research on Innovative Bio-based Materials (ICRI-BioM), Politechnika Łódzka; Łódź, Poland

**Position**: Ph.D. student in Computational Chemistry

**Requirements:**

We seek a highly motivated and enthusiastic Ph.D. student for a period of 3 years at the International Centre for Research on Innovative Bio-based Materials (ICRI-BioM), Lodz University of Technology. This position is part of the M.ERA-NET project “Hybrid ELectrosynthesis of Value-Added Chemicals” (HELVA), financed by the NCN (National Science Centre), Poland.

**Principal Investigator of the project**: dr hab. Vignesh Kumaravel, Ph.D., D.Sc. (International Centre for Research on Innovative Bio-based Materials, Lodz University of Technology).

**Co-Investigator responsible for the research tasks**: Professor Piotr Paneth, Ph.D., D.Sc.

**ELIGIBILITY CRITERIA:**

- Any nationality or gender.  
- Graduate of MSc studies in the following fields: Chemistry, Physics, Informatics, (or related fields).  
- Ph.D. student status at the start and during participation in the project.  
- Good practical and theoretical knowledge of computational techniques for periodic systems,

- Practical knowledge of quantum-mechanical packages,

- Skill in handling computational hardware,  
- Great work capacity and enthusiasm for research,  
- Fluency in spoken and written English,  
- Publications in refereed journals, and internships abroad, or teaching abilities will be considered as advantages.  
- Prior computational experience will be considered as valuable asset.

**SCOPE OF WORK**:

- Multiscale modeling of metabolic pathways

* Molecular Dynamics (MD) calculations
* QM/MM calculations

**NCN competition type**: M.ERA-NET  
**application deadline**: 25th October, 2023, 6:00 PM (CET)  
**Application method**: A single PDF via email

**Employment conditions**:

**WE OFFER**

The stipend level (scholarship) is 4000 Polish zloty gross/month for 3 years. An active environment and a highly motivated group.

**THE APPLICATION MUST CONTAIN:**

- a brief motivation letter (one page) outlining why you are interested in the position, your CV including your previous research projects, work experience, career goals & a complete list of conference abstracts and/or publications, and Copies of degree certificates and transcripts.

- consent to the processing of personal data according to the following statement: for the purpose of the recruitment process, please attach a declaration of consent to the processing of personal data for recruitment purposes should include the following clause: "I consent to the processing of my personal data for the purposes necessary to carry out the recruitment process in accordance with Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (GDPR).”

**HOW TO APPLY**

Please attach your application in English as a single PDF file (max 15 Mb) and send it to: [piotr.paneth@p.lodz.pl](mailto:piotr.paneth@p.lodz.pl)   
Deadline for applications: 25th October 2023

Planned date of conclusion of the call: 1st November 2023

Planned start date of the position: November 2023 or later if necessary.

**ADDITIONAL INFORMATION**

The best candidates will be invited for a 30-minute job interview that will be organized on the Microsoft Teams platform.

The competition may not be settled due to a lack of candidates meeting the requirements.  
The decision of the Recruitment Committee cannot be appealed.  
The scholarship is granted according to REGULATIONS FOR AWARDING NCN SCHOLARSHIPS FOR NCN-FUNDED RESEARCH PROJECTS.  
The NCN research scholarship may be combined with other scholarships and salaries financed from NCN funds awarded under more than one research project, with the reservation that the total amount of scholarships and salaries collected may not exceed 5,000 PLN per month.  
  
**PROJECT OVERVIEW**

**Hybrid ELectrosynthesis of Value-Added Chemicals (HELVA)**

**Rationale**: The manufacturing of chemicals and carbon-based materials still relies on fossil fuels and energy/carbon-intensive processes. HELVA proposes an alternative approach using CO2 as the carbon source to realize complex carbon-based non-petrochemical plastics powered by renewable electricity.\

**Objectives**: HELVA pursues the e-synthesis of polyhydrohyalkanoates (PHAs) from captured CO2 using a tandem system approach that couples CO2 electrolysis and microbial bio-upgrade.

We will pursue these goals through advances in catalyst, system, and reactor design, as well as microbe engineering to promote PHA metabolic pathways. Our final objective is the synthesis of PHA at concentrations above 50 g/L.

**Potential applications**: The realization of sustainable biodegradable plastics.

**Impact and potential benefits**: The proposed technology would offer a path for the sustainable biological manufacturing of non-petrochemical renewable plastics, mitigating global emissions and warming.