

Free Radical Polymerization in Metal-Organic Frameworks - towards New MOF/Polymer Hybrids

Position: PhD Candidate in the doctoral school

Principal Investigator: [Prof. Wojciech Bury](#)

Faculty of Chemistry, University of Wrocław

Description of research tasks:

In this project, an original strategy for obtaining MOF/polymer hybrids will be developed, which allows for permanent binding of an organic polymer directly to the MOF material. The main goal of this project is to investigate the possibility of creating new multifunctional MOF/polymer hybrid materials using a porous material as a macroinitiator in free radical polymerization. The original MOF/polymer hybrids obtained during this project will be tested for the capture of greenhouse gases (carbon dioxide), hydrocarbon vapors and volatile organic compounds, separation of difficult-to-separate mixtures (e.g., alkane isomers, aromatic hydrocarbons).

1. Synthesis, purification and separation of organic compounds, synthesis and modification of MOF materials, polymerization processes,
2. Carrying out reactions under anaerobic conditions (Schlenk line, glovebox),
3. Structural measurements (structural X-ray), spectroscopic (NMR, IR, others), mass spectrometry (MALDI, others), electron microscopy (SEM/EDS), thermogravimetric (TGA, DSC), sorption measurements, etc.,
4. Analysis and discussion of partial and final results in the form of reports,
5. Presentation of results at international conferences,
6. Preparation of manuscripts for scientific publications,
7. Applying to the Polish National Agency for Academic Exchange (NAWA) for financing a foreign 4-month internship, and after obtaining funding, carrying out this internship during the Preludium Bis 4 project (planned year of internship: 2025, Spain),
8. Preparation of a doctoral dissertation with the project manager as the supervisor. The project must end with obtaining a doctoral degree within 12 months from the end of the project.

Requirements:

The call may be entered by a person who does not hold a doctoral degree and is not currently a participant in a doctoral school.

- MSc. degree in chemical education - please provide a copy of the diploma confirming the title of MSc. in chemistry,
- experience (at the level of the MSc. in chemistry) in the synthesis, purification and characterization of organic compounds or coordination polymers as well as physicochemical studies - please attach a summary of the master's thesis (max. 2 A4 pages),
- evidence of scientific activity, such as: publications, participation in research projects, participation in conferences, scholarships, awards - please provide scans of publications and/or a short description of other achievements (1 A4 page),
- predisposition to conduct experimental research work,
- enthusiasm and commitment to scientific work,
- ability to work in a group,
- fluency in English in speech and writing.

The PRELUDIUM BIS 4 call is addressed to candidates who plan to start doctoral school in the academic year 2023/2024. The scholarship will be awarded to a person selected in the recruitment procedure, who will have the status of a doctoral student in the doctoral school starting from the date of commencement of research tasks in the Project.

Type of the NCN call: PRELUDIUM BIS - ST

Deadline for submission: 15-09-2023, 23:59

Submission of documents: by e-mail to the PI's address: **wojciech.bury@uwr.edu.pl** (in the subject of the e-mail, please write - "Scholarship in the PRELUDIUM BIS 4 - Bury") or in person/by correspondence to the following address: **Faculty of Chemistry, University of Wrocław, ul. Joliot-Curie 14, 50-383 Wrocław**. The following note should be placed on the envelope: "Scholarship in the PRELUDIUM BIS 4 - Bury".

Conditions of employment:

Planned start date of work in the project: **01.10.2023 r.**

The doctoral scholarship will cover **48 months** (starting from **01.10.2023 r.**).

The young scientist selected in the competition will receive a scholarship and will complete a **4-month internship** abroad, additionally financed by the Polish National Agency for Academic Exchange (NAWA).

The amount of the scholarship is:

- **5,000 PLN per month (gross)*** until the month in which the mid-term evaluation of the doctoral student at the doctoral school will be carried out,
- **6,000 PLN per month (gross)*** after the month in which the mid-term evaluation of the doctoral student at the doctoral school will be carried out.

* Pursuant to the Law on Higher Education and Science of July 20, 2018, the scholarship will be reduced by contributions under the Higher Education Act.

Additional information:

The competition application should contain:

- 1) CV considering the above-mentioned expectations,
- 2) Summary of the master's thesis (max. 2 A4 pages),
- 3) A cover letter with a description of the competences to implement the project,
- 4) A copy/scan of your graduation diploma,
- 5) Information on scientific achievements and internships (documents confirming),
- 6) The following statement should be included in the documentation: I consent to the processing of my personal data for the recruitment process in accordance with the Act of May 10, 2018 on the protection of personal data (Journal of Laws of 2018, item 1000) and in accordance with the Regulation of the European Parliament and of the Council (EU) 2016/679 of 27 April 2016 on the protection of persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (RODO).

The recruitment procedure will take place according to the rules announced on the NCN website regarding the Preludium Bis 4 call. The candidate may be asked to participate in an interview with the committee (in person or online).



Uniwersytet
Wrocławski

