

Project: *Designing the electronic properties of novel 2D layered crystals via alloy engineering for efficient photo-electro-chemical action*

Principal Investigator: prof. Agnieszka Jastrzębska

Position in the Project: PhD student

Institution: Institute of Metrology and Biomedical Engineering, Faculty of Mechatronics, Warsaw University of Technology

Requirements:

1. Master's degree in Engineering, Materials Science or Biomedical Engineering, plus PhD enrollment.
2. Knowledge in the field of materials chemistry and engineering, in particular in the field of characterization of two-dimensional (2D) materials.
3. Knowledge and experience in carrying out scientific research using MXene materials, with a particular focus on their bioactive properties and characterization.
4. Experience in preparing scientific publications and disseminating the results of the project at scientific conferences.
5. Participation in the implementation of research or research and development grants.
6. Fluent spoken and written English.
7. Strong motivation and passion for scientific work both independently and as part of a team in an interdisciplinary environment, with the ability to creatively propose solutions to problems at hand, pay close attention to detail, and meet deadlines.
8. Very good soft skills towards efficient research teamwork.
9. The student should be enrolled and admitted to the WUT Doctoral School.

General description of the project:

Warsaw University of Technology, Faculty of Mechatronics, is conducting research under the Opus 27 grant entitled "Designing the electronic properties of novel 2D layered crystals via alloy engineering for efficient photo-electro-chemical action", financed by the National Science Centre.

The scientific goal of the project is to conduct fundamental investigations into MXene-based electroactive MXenes. As part of the research tasks under the NCN project, the holder of the doctoral student scholarship position will be required to conduct scientific research, in particular under WP 5: "Preparation and characterization of structure, composition, morphology and optical and electrochemical properties of the alloyed 2D structures" and WP 6: "Research on the photo-electro-chemical efficiency of alloys in HER/OER processes in the in-operando mode". The student will have his/her PhD programme planned in the WUT PhD school around compositional analysis through spectroscopic analyses, including in-operando Raman spectroscopy, Fourier-transform infrared (FTIR) spectroscopy, X-ray photoelectron spectroscopy (XPS), and Energy-dispersive X-ray (EDX) spectroscopy. Implementation of MPX3 and MBenes in advanced electrodes to ensure optimal performance. The recruited PhD student will also participate in preparing scientific publications and disseminating project results at scientific conferences.

What we offer:

1. Scholarship contract and competitive remuneration package.
2. Work in a dynamic and competent scientific group with an excellent research environment and international cooperation, promoting publications in high-impact journals.
3. Financial support for abroad scientific visits and attending conferences.
4. Encouragement and support in preparing grant applications and general career development.

Type of NCN Project: Opus 27 – ST.

Application deadline: 30.06.2026, 23:59.

Results available on: 31.07.2026.

Submit documents to: agnieszka.jastrzebska@pw.edu.pl

Conditions of employment:

PhD scholarship total planned in the project: 192 000,00 PLN.

Preferred time of starting position: 1st September 2026.

The student should be enrolled and admitted to the WUT Doctoral School.

Additional information:

To apply, please send your application, including a motivation letter, CV with the list of your publications and achievements, Master's degree thesis, alongside with contact information to the scientific supervisor and other referees (if available) to the following e-mail address: agnieszka.jastrzebska@pw.edu.pl. Incomplete applications will not be considered. We thank all applicants for their interest; however, only selected candidates may be invited for an interview. Applications will be accepted until the position is filled. If the competition winner resigns from signing the contract, we reserve the right to select the next best person from the ranking list.

RODO statement:

Due to the entry into force of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, all candidates are requested to provide consent to the processing of his or her personal data by the institution which carries out the recruitment process. **Thus, please include in your application the following statement: "I hereby agree to the processing of my data included in the application documents by Warsaw University of Technology, Warsaw, Poland, to carry out the recruitment process."** Your personal data is processed on the basis of the Article 6 Part 1 Points (c) and (f) of the 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; Official Journal of the European Union L 119/1).