



**Międzynarodowa Środowiskowa Szkoła Doktorska
przy Centrum Studiów Polarnych
w Uniwersytecie Śląskim w Katowicach**

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No. of PhD project: IEDS/2023/US/04

Title of PhD project: *Long-term stability of nano-structured polypyrrole under environmental conditions*

The leading unit: Institute of Materials Engineering University of Silesia in Katowice (IIM UŚ), Chorzów

Requirements:

1. Completed second-cycle studies (MSc) in the field of Materials Science or related. Knowledge of research topics related to the synthesis and testing of advanced polymer materials.
2. Knowledge of issues related to the properties of polymeric materials, typical tools and methods used in the analysis of materials.
3. Knowledge of the English language enabling communication, reading and writing scientific papers.

Tasks description:

1. Analysis of polymeric materials in terms of physicochemical and structural properties.
2. Acquisition, processing and analysis of experimental data obtained by spectrometric and electrochemical techniques.
3. Planning, preparation, organization and conducting of scientific research.
4. Preparation of scientific articles and conference presentations.
5. Regular reporting of work progress, including presentation at the Institute's level.
6. Assistance in everyday scientific and didactic tasks of the unit, including co-care of measuring equipment.
7. Active assistance to team members in the team's work.

Abstract:

Polypyrrole belongs to the group of special materials, the so-called smart materials. Its electroactivity allows it to be used in areas where the essence of the interaction is the change of material properties under the influence of the transmission of an electric impulse. These applications include the production of modern high-capacity batteries, sorption materials for water purification, functional anti-corrosion coatings, electromagnetic shielding materials or biomedical materials that are designed to function in a living organism. The work focuses on these areas, primarily taking into account the material properties of the polymers produced. The work is focused on determining the influence of environmental conditions on the change of the functional properties of this material.



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Other information:

The work will be carried out under supervision of: dr hab. Aneta Hanc-Kuczkowska, prof. UŚ, e-mail: aneta.hanc@us.edu.pl and dr inż. Sylwia Golba, e-mail: sylwia.golba@us.edu.pl, Institute of Materials Engineering, University of Silesia in Katowice.

Secretary of the IEDS Recruitment Committee: +48 32 3689 380, e-mail: polarknow@us.edu.pl

Information on the IEDS admissions: https://www.mssd.us.edu.pl/en/admission_2023_2024-reg/