
PHD STUDENT IN THE DOCTORAL SCHOOL – CALL FOR APPLICATIONS

Position: PhD student in Material Engineering

Unit of the project realization: Faculty of Science and Technology – University of Silesia in Katowice

Unit realizing the PhD student education: Doctoral School at the University of Silesia in Katowice in cooperation with the European University consortium – Transform4Europe

The research undertaken by the successful applicant will be carried out within the framework of the project “New materials for medical applications”.

Duration of the scholarship: 48 months

Scholarship amount: 3466,90 PLN / 5340,90 PLN (after mid-term evaluation)

PhD supervisor: dr hab. Grzegorz Dercz, prof. UŚ

Project description:

For years, there has been a dramatic increase in the demand for long-term bone and dental implants. Unfortunately, at the same time, there is a high rate of premature reimplantation; despite the efforts of scientists, medics, and medical companies, there is no ideal implant material. One of the most important problems of current solutions is the mismatch between the mechanical properties of the material and those of human bone, especially in the case of long-term bone implants. Therefore, the research plans a holistic approach to the design of long-term bone implants, considering the material's manufacturing method, structure, chemical composition, and mechanical properties.

The project relates to new materials for potential medical applications. In particular, the academic interests (and expertise) include powder metallurgy, materials testing methods, titanium alloys and derivatives, composite materials, porous materials, materials for medicine, and surface modification.

The project will be implemented as an international PhD in cooperation with partner universities within the consortium “Transform4Europe”. Part of education and research will be realized in one of the partner European universities.

Requirements:

1. MSc in Materials Engineering, Biomedical Engineering or related.
2. Fluency in English (both spoken and written)
3. Very good knowledge of:

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- a. knowledge about materials based on biocompatible elements, especially zirconium alloys for medical applications,
 - b. knowledge and ability to synthesize by arc melting and powder metallurgy,
 - c. knowledge and ability to plan and carry out experiments
 - d. to plan and carry out experiments on zirconium-based materials,
 - e. knowledge of techniques for investigating the microstructure and phase composition of materials, such as X-ray diffraction, scanning electron microscopy, optical microscopy,
 - f. knowledge of testing techniques for the mechanical properties of the material, microhardness, reduced Young's modulus, etc.,

Required documents:

1. A written outline of a research proposal (up to 4500 characters) including methodology, research goals, and bibliography.
2. A list of the candidate's scientific publications.
3. A CV focused on research and academic experience.
4. A copy of the MSc diploma.
5. One letter of recommendation.

Candidates should register in the IRK system (<https://irk2.us.edu.pl/>), select "Admission to the Doctoral School at the University of Silesia in Katowice – ADMISSION FOR PROJECTS," and choose a suitable project title.

Documents should be delivered until **31.05.2024** through the IRK system.

In case of any questions before submitting the formal application, please contact the Doctoral School (szkola.doktorska@us.edu.pl).

Documents will be evaluated by an interview panel led by the project leader. Admission will be carried out in English. Interviews will be organized online. The final decision will be sent to the candidates via the IRK system until **17.06.2024**.