

INSTITUTION: **The National Centre for Nuclear Research**



CITY: Otwock / Świerk

POSITION: **PhD student scholarship – material science at NOMATEN CoE**

DISCIPLINE: physics, materials science

POSTED: 28|10|2022

EXPIRES: 30|11|2022

WEBSITE: <https://www.ncbj.gov.pl/en/praktyki/phd-student-scholarship-material-science-nomaten>

KEY WORDS: Physics, Materials Science, Material Characterization

PhD student scholarship – material science

Research topic description:

The person hired will carry out the research topic related to the project entitled "Development of nano-twinned high entropy alloys with superior mechanical properties and enhanced radiation resistance", contract no: UMO-2021/43/P/ST5/02663, which is funded by the National Science Center under the POLONEZ BIS competition (project leader Dr. Wenyi Huo). The PhD topic concerns the fabrication of a new type of high entropy alloys dedicated for Generation IV reactors. The fabricated materials will be submitted to ion-radiation damage. Using available analytical methods, SEM, TEM, XRD, nanoindentation, the effect of radiation defects on the structural and mechanical properties of the material will be determined. This will allow us to understand the mechanism of defect accumulation and migration in the material structure and their impact on the functional properties of the alloy. The hired person will be involved in conducting all experimental activities and in the fabrication process, which will be carried out using arc melting and rolling.

We offer:

- stipend paid from the project 4200 PLN/month (gross)
- work in the only research institute in Poland with a nuclear reactor
- the opportunity to participate in the creation of a new international unit, the chance for personal success related to the development of MAB NOMATEN;
- the opportunity for personal growth through a diverse range of tasks and challenges in the study of materials dedicated to nuclear technologies;
- the opportunity to participate in international and national scientific conferences;
- company transportation providing access to Świerk from many places in Warsaw and the surrounding area (detailed schedule in the "contact" tab at www.ncbj.gov.pl).

Role and Responsibilities:

- fabrication of materials and preparation of samples for the experiments (cutting, polishing, encapsulating)
- preparing specimens for testing in a transmission electron microscope (TEM);
- conducting tests on TEM microscope (especially using STEM/HAADF and EDS techniques);
- conducting mechanical tests (mini-tensile with DIC, microhardness, mini-charpy)
- conducting in-situ studies at elevated temperatures (e.g., nanoindentation)
- independently designing, performing and optimizing the conducted tests, depending on the type of material;
- reporting results on a regular basis;
- cooperating with all members of the CoE;
- preparation of scientific publications.

Requirements:

- degree in materials engineering, mechanics or related field;
- scientific experience documented by scientific publications;
- knowledge of the physical fundamentals of TEM methods (good knowledge of the basics of crystallography);
- knowledge of experimental methods of solid-state physics (e.g., nanoindentation and/or tensile testing);
- experience in testing the structural properties of metallic materials such as steels, super alloys, and high entropy alloys;
- experience in examining radiation damaged materials or mechanical testing at high temperature would be a plus;
- experience with in-situ TEM testing will be considered;
- willingness to continuously acquire knowledge and improve qualifications, creativity, responsibility, good organization, ability to work in a team, communication skills;
- excellent oral and written English language skills.

Place of work:

NOMATEN Centre of Excellence, National Centre for Nuclear Research (NCBJ), 7 Andrzeja Sołtana St., 05-400 Otwock - in the outskirts of Warsaw with daily transport services provided.

Required documents:

- CV
- a cover letter;
- description of previous scientific activity
- letters of recommendation

Contact: dr. Wenyi Huo, wenyi.huo@ncbj.gov.pl

Application deadline: November 30th, 2022

Applications in electronic form should be submitted in English to: magdalena.jedrkiewicz@ncbj.gov.pl.

Candidates may be asked to provide additional documents. We reserve the right to contact only selected candidates and the right to inform about the decision to fill the post only to the selected candidate.

Candidates may be asked to provide additional documents. In the selection process, short-listed candidates will be interviewed in person or remotely.

INFORMATION CLAUSE ON PERSONAL DATA PROCESSING:

1. The Personal Data Controller of your personal data is the National Centre for Nuclear Research (hereinafter referred to as Controller or NCBJ) with its registered office in Otwock, 7 Andrzej Sołtan Street, 05-400 Otwock.
2. Your personal data will be processed for recruitment purposes on the basis of applicable law, including the Labour Code. Data not required by law, provided by you in your documents, will be processed on the basis of your consent. Your consent is given by the transfer of this data.
3. The full content of the information clause of Article 13 RODO is available at <https://www.ncbj.gov.pl/en/information-clause-personal-data-processing>



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