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At the **Faculty of Nuclear Science and Physical Engineering (FNSPE)**, Department of Materials, group of Prof. Miroslav Karlík, we have a job opportunity for a

Junior researcher (Postdoc),

in advanced testing and characterization of ferroic materials. The position, within the European project “Ferroic multifunctionalities”, is offered for three years, starting on January 1st, 2025.

Background

Although significant attention has been given to ferroic materials still exist opportunities for novelty in the testing of such materials as it requires a multidisciplinary approach including solid-state physics, materials science, experimental mechanics, and physical metallurgy.

The experimental facilities at FNSPE enable novel testing and characterization of ferroic materials and devices, using various custom and standard mechanical tests and the correlative (light, electron, X-ray, Raman) microscopy methods. Combining a wide range of experimental techniques could lead to the understanding of the fundamental properties of ferroic materials, address the pressing problems of the industry, and contribute to the improved design of specialized testing equipment.

Job content

The postdoctoral position will be devoted to the development of novel testing methods, microstructure-property correlation of ferroic materials, finding novel multiferroic materials, and the usage of correlative microscopic, mechanical, and micro-mechanical techniques. Some of the topics to be pursued in the frame of the postdoctoral position follow:

- fatigue degradation of ferroic materials and the relation to cyclic R curve (CPCR, annealing) and magnetic properties,
- the applicability of digital image correlation and instrumentation-based approaches to use J-integral as the crack driving force,
- damage effect of internal dissipation at cyclic deformation – the role of temperature and their gradients,
- correlative microscopy techniques to capture dynamic properties of ferroic materials,
- use of arc furnace to produce new materials that could exhibit ferroic properties (including quasicrystals) and development of the testing methods to evaluate them.

Profile

- doctoral degree in materials science or mechanical engineering,
- motivation for design and further development of testing methods,
- good knowledge of fracture mechanics, physical metallurgy, and electron microscopy,
- ability to conduct research independently,
- experience in writing of scientific papers, preferably as a corresponding author,
- excellent communication skills and positive attitude.

The remuneration will be 53 000 CZK/month (approx. 2 100 EUR, a good salary for the Czech Republic with quite low living costs).

Applicants are requested to send their application materials (a motivation letter, CV, list of publications, and the name of a distinguished scientist with whom the application can be consulted) to Prof. Miroslav Karlík, E-mail: Miroslav.Karlik@fjfi.cvut.cz. The deadline for applications is **30th September 2024**.