

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



CITY: Otwock / Świerk

POSITION: **Postdoc position in theoretical glass physics / computational science** at MAB
NOMATEN

DISCIPLINE: material engineering, physic

POSTED: 14|03|2025

EXPIRES: 03|04|2025

WEBSITE: <https://www.ncbj.gov.pl/en/praca/postdoc-position-theoretical-glass-physics-computational-science>

KEY WORDS: material engineering, condensed matter physics, machine learning

Postdoc position in theoretical glass physics / computational science

**NOMATEN Centre of Excellence,
National Nuclear Research Centre (NCBJ),
Poland**

NOMATEN Centre of Excellence is formed through a partnership between NCBJ (Poland), CEA (France) and VTT (Finland) with joint financial support from the Foundation for Polish Science (FNP) and the European Commission. NOMATEN focuses research on the characterization, analysis and development of advanced multifunctional materials, specifically those designed to work in extreme conditions, with primary examples being radiation, high temperature and corrosion. More about NOMATEN CoE and the detailed project descriptions at <http://nomaten.ncbj.gov.pl>.

The position will be funded under the project titled "Designing Improved Metallic Glasses", led by Dr. Silvia Bonfanti (grant no. FENG.02.02-IP.05-0177/23), carried out within the FIRST TEAM program of the Foundation for Polish Science (FNP), financed by the European Funds for a Modern Economy (FENG).

The project implementation period is from January 1, 2025, to December 31, 2028.

Requirements:

- Ph.D. in physics (who has been awarded a PhD degree within 7 years before publishing the ad)

- We search for a candidate interested in glasses. The topics range from materials' deformation to machine learning approaches and we are interested in particular in complex metallic glasses. Some recent example publications are: *Phys. Rev. Research* 4, L022043 (2022), [arXiv:2303.09161](https://arxiv.org/abs/2303.09161), [arXiv:2309.05806](https://arxiv.org/abs/2309.05806).
- **Preferred background:** Statistical mechanics, computational simulations, machine learning.

Plus:

- documented scientific achievements in the form of peer-reviewed articles in JRC journals;
- fluent English, spoken and written, enabling efficient communication and preparation of scientific articles;
- strong motivation for scientific work and assimilation of new knowledge and technical skills;
- good interpersonal and communication skills, to be able to work in a multi-cultural environment both independently and as a part of a team.

Description of task:

The selected candidate will be responsible for conducting theoretical and computational research in the field of glass physics, with a particular focus on complex metallic glasses. The key tasks include:

- Computational Modeling of Glassy Materials:
 - Performing large-scale molecular dynamics (MD) and Monte Carlo (MC) simulations to study the structural, mechanical, and dynamical properties of metallic glasses.
 - Developing computational approaches to analyze deformation mechanisms, relaxation dynamics, and phase stability in disordered materials.
- Statistical Mechanics & Theoretical Analysis:
 - Applying statistical mechanics and thermodynamic principles to investigate fundamental properties of glassy systems, including energy landscapes, aging, and plasticity.
 - Developing analytical models and data-driven methods to understand glass transition and mechanical behavior under extreme conditions.
- Machine Learning Approaches for Material Characterization:
 - Implementing machine learning techniques for structure-property predictions in disordered systems.
 - Applying artificial intelligence (AI) algorithms to identify key descriptors for glass formation, stability, and mechanical performance.

Location:

National Centre for Nuclear Research (NCBJ), ul. Andrzeja Sołtana 7, 05-400 Otwock, Poland (Suburb of Warsaw, efficient and free daily bus transport service provided).

Gross Salary:

13,000 PLN per month (at current exchange rate 3 100 € per month); the details in each case depend on qualifications and experience, and the compensation is composed of the base salary, seniority addition, functional addition and project bonus)

Read more about contributions in Poland at <https://www.ncbj.gov.pl/en/hrcareer/contributions-poland>

We offer:

Full-time employee contract for 45 months (with possibility of extension – 48 months).

Work in international networks with research institutes and industrial companies.

Access to the research potential of NOMATEN's three partners between NCBJ (Poland), CEA (France) and VTT (Finland) and other scientific partners.

Travel funds for participation in conferences and collaboration, attractive working conditions, atmosphere of teamwork, family-friendly environment with flexible working hours. support of an experienced local team in legal, financial and organisational issues as well as logistic support and advice related to working in Poland - enabling smooth relocation and equal opportunities.

Required documents:

- ✓ Cover letter that explains the motivating factors for considering the position (max. 1 pp)
- ✓ CV with complete publication list
- ✓ Brief description of important scientific achievements and scientific outlook (max. 2 pp)
- ✓ Two references letters arranged by applicants and directly submitted before the application deadline.
- ✓ PhD diploma copy/scan

The recruitment is open to candidates who, at the time of submitting their applications, do not have a diploma confirming PhD, but who have a fixed date for obtaining this title before the planned date of employment. In this case, it is necessary to provide documents that prove that.

- ✓ As an attachment to your application please sign and enclose the following declaration:
I agree to the processing of my personal data included in this application for the needs necessary to carry out the recruitment.

Contact person: Dr. Silvia Bonfanti (silvia.bonfanti@ncbj.gov.pl).

Application deadline: April 3st, 2025

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

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.

Position starts on: April 15th, 2025 (at the earliest).

Read more about positions: <http://nomaten.ncbj.gov.pl/job-vacances>

INFORMATION CLAUSE ON PERSONAL DATA PROCESSING:

1. The controllers of the personal data processed during the recruitment process are:
 - 1) National Centre for Nuclear Research, ul.Andrzeja Sołtana 7, 05-400 Otwock and
 - 2) Foundation for Polish Science, ul. I. Krasickiego 20/22, 02-611 Warszawa.
2. The data protection officer can be contacted by using the following address:
 - 1) Personal Data Protection Officer, National Centre for Nuclear Research,
Sołtana 7, 05-400 Otwock, Poland
 - 2) iod@ncbj.gov.pl
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