



Institute of Molecular Physics
Polish Academy of Sciences
Mariana Smoluchowskiego 17, 60-179 Poznań, Poland
www.ifmpan.poznan.pl
tel. 61 8695 100, fax 61 8684 524

Director of the Institute of Molecular Physics of the Polish Academy of Sciences
announces a competition for a post-doc position in the OPUS-21 Research Project

Institution: Institute of Molecular Physics Polish Academy of Sciences (IMP PAS)
[PL: Instytut Fizyki Molekularnej Polskiej Akademii Nauk (IFM PAN)]

City: Poznań, Poland

Position: Post-doc

Scientific discipline: physical sciences (or related)

Opening date: 07 April 2025

Application deadline: 28 April 2025; 15:00 CEST

Website: <https://www.ifmpan.poznan.pl/en/>

Key words:

condensed matter physics, computational physics, applied physics, first-principles calculations, atomistic spin dynamics simulations, magnetic materials, machine learning.

I. Offer description:

Title of the scientific project: *Searching for free rare earth and rare earth free permanent magnets using machine learning*

Principal investigator: Dr. hab. Mirosław Werwiński, Prof. IMP PAS

Project description: Using machine learning algorithms, a universal model will be developed based on the database we will prepare, which then will be used to predict optimal permanent magnet compositions. The database will be created on the basis of quantum-mechanical calculations, called first-principles calculations, in which materials will be modeled at the atomic level in terms of the spatial distribution of atomic nuclei and electrons.

Research objective: To discover replacements for currently used permanent magnets.

Research tasks:

- ab initio calculations (using the density functional theory DFT) of magnetic properties of permanent magnets;
- implementation of machine learning algorithms and development of universal model for predictions of permanent magnet compositions;
- analysis and interpretation of obtained results;
- help with supervising master's students;
- collaboration with experimental partners;
- cooperation with domestic and foreign partners;
- preparing scientific papers based on the obtained results;

- presentation of results at conferences and dissemination of results in the form of seminars at home and abroad;
- taking part in scientific schools and internships.

II. Requirements for candidates:

- 1. Research career stage:** R2 – Recognised Researcher (PhD holders or equivalent who are not yet fully independent). More information on career stages: <https://www.more-4.eu/indicator-tool/career-stages-r1-to-r4>
- 2. Required education:**
PhD in physics (or related) granted not earlier than 7 years* before the year of a start of employment.
- 3. Required qualifications and skills:**
 - knowledge in the field of solid state physics and physics of magnetism;
 - the basic skills in programming.
- 4. Special requirements:**
The candidate must meet the conditions described in point 2.1.1 Annex to NCN Council Resolution No 95/2020 of 14 September 2024 about the regulations on awarding funding for research tasks funded by the National Science Centre as regards research projects.
- 5. Knowledge of English:**
good knowledge of English, allowing for communication with other team members and preparation of scientific publications.
- 6. Scientific experience required:**
 - in the discipline of physical sciences (or related);
 - in the subject: solid state physics, computational physics, applied physics, first-principles calculations, atomistic spin dynamics simulations, magnetic materials; or in the subject: mathematical physics, applied mathematics, machine learning.

III. Duration of the employment: 12 months (with the possibility of extending)

IV. Type of contract: full-time job, employment contract

V. Expected date of employment start: 01 June 2025

VI. Employment type: contract within the NCN OPUS-21 project (UMO-2021/41/B/ST5/02894)

VII. Salary: ca. 10000 PLN per month (total cost of the employer)
[approximately ten thousand]

VIII. Number of positions offered: 1

IX. Job benefits: raising the level of competence, acquiring new knowledge, experience and skills, establishing scientific cooperation.

X. Required documents:

1. Application;
2. CV including information on education and the course of scientific careers, internships and scientific training, conference presentations and seminars, prizes and awards, participation in research projects, acquired funds, organizational achievements, etc.;

3. List of scientific publications (including a description of the candidate's contribution to the three most important selected publications);
4. A scan or photocopy of English certificate for non-native English speakers;
5. A scan or photocopy of the PhD degree;
6. Consent to the processing of personal data for recruitment purposes – Appendix No. 1;
7. Statement that if the contest is won, Institute of Molecular Physics Polish Academy of Sciences will be the primary place of work within the meaning of the Act of 20 July 2018 *Law on Higher Education and Science* (Journal of Laws of 2018, item 1668, as amended) – Appendix No. 2;
8. Supervisor's opinion or reference letters in the case of young researchers are optional.

Documents in languages other than Polish or English must be translated to Polish or English.

XI. Method of submitting offers:

Applications with the annotation „**Competition for the post-doc position OPUS-21 – ZN2 – No. 02/2025**” should be delivered to the Institute's address or sent to the e-mail address: director@ifmpan.poznan.pl

Contact person:

Department of Theory of Nanostructures and Quantum Materials
Principal investigator: Dr. hab. Mirosław Werwiński, Prof. IMP PAS
E-mail: werwinski@ifmpan.poznan.pl
Phone: +48 61 8695150

XII. Qualification criteria:

- Candidate's ability to fulfill scientific objectives of the project;
- Candidate's scientific achievements, including publications;
- Distinctions, scholarships, awards, completed scientific trainings, workshops, participation in research projects and scientific experience acquired outside the parent scientific unit in the country or abroad.

XIII. Qualification process:

- 1) Job application competition;
- 2) The best-ranked candidates may be invited to an interview (either an on-site interview or videoconference).

The evaluation and selection will be conducted by a recruitment committee appointed by the Director of the Institute of Molecular Physics of the Polish Academy of Sciences following "Regulations on awarding funding for research tasks funded by the National Science Centre as regards research projects" constituting an annex to the resolution of the NCN Council No. 95/2020 of September 14, 2020.

A candidate who receives a negative opinion from the recruitment committee has the right to appeal against the evaluation results to the Director of the Institute within 7 days from the date of receiving the opinion.

XIV. Expected date of the results announcement: May 2025

XV. Additional information: IPM PAS does not provide accommodation.

**) The period may be extended by a time of long-term (over 90 days) documented sick leaves or rehabilitation leaves granted on account of being unfit to work. In addition, the period may be extended by the number of months of a childcare leave granted under the Labour Code and, in the case of women, by 18 months for every child born or adopted, whichever manner of accounting for career breaks is preferable.*

*/signed: prof. dr hab. Zbigniew Trybula
Director IFM PAN/*

DISCLAIMER:

According to art. 13 1 and 2 of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (Journal of Laws UE L 119/1 of 4.5.2016), hereinafter referred to as GDPR, we inform that:

1. The administrator of your personal data is the Institute of Molecular Physics Polish Academy of Sciences in Poznań, ul. Mariana Smoluchowskiego 17.
2. Your personal data will be processed for the duration of the recruitment process.
3. You have the right to request from the administrator access to personal data, the right to correct them, delete or limit processing, the right to object to the processing of personal data, as well as the right to transfer data.
4. You have the right to withdraw your consent at any time. The above does not affect the compliance with the law, which was made on the basis of your consent before it was withdrawn.
5. It is possible to lodge a complaint with the supervisory body – the President of the Office for Personal Data Protection.
6. Providing personal data is voluntary.
7. Your data will not be shared with entities other than entities authorized on the basis of applicable law.
8. The administrator will not transfer your personal data to recipients in third countries and international organizations.

Consent for the processing of personal data for recruitment purposes

I agree to the processing of personal data provided in this document for realising the recruitment process pursuant to the Personal Data Protection Act of 10 May 2018 (Journal of Laws 2018, item 1000) and in agreement with Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).

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Name

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Date and signature

DECLARATION

I declare that if I win the Contest the Institute of Molecular Physics of the Polish Academy of Sciences will become my primary place of work within the meaning of the Act of 20 July 2018, Law on Higher Education and Science (Journal of Laws of 2018, item 1668, as amended).

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Name

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Date and signature