



Institute of Molecular Physics
Polish Academy of Sciences
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**Recruitment for the Ph.D. position in PRELUDIUM BIS 1 Research Project and for the
Poznan Doctoral School of the Institutes of the Polish Academy of Sciences at the Institute of
Molecular Physics, PAS in Poznan
Procedure No. 1/2020/IFM PAN/PSD**

Institution: Institute of Molecular Physics Polish Academy of Sciences (IMP PAS)
City: Poznań, Poland
Position: Ph.D. student
Positions available: 1
Scientific discipline: physics, material engineering
Publication date: 06 August 2020.
Application deadline: 24 August 2020; 15:00 CEST
IMP PAS website: <https://www.ifmpan.poznan.pl>
PDS website: <https://www.ifmpan.poznan.pl/BIP/index.php/edukacja/psd-ipan>

RESEARCH PROJECT OFFER:

Research topic: *Future permanent magnets from design*

Keywords: solid state physics, condensed matter properties, computational physics, applied physics.

Research group: Department of Solid State Theory (Z2)

Principal Investigator: dr hab. Mirosław Werwiński

Project description:

The aim of the PRELUDIUM BIS 1 project is to develop a new generation of magnetic alloys for application as permanent magnets and study of influence of chemical composition on their magnetic and electronic properties. The motivation to undertake the above research is the search for new hard magnetic materials containing no rare-earth metals as the replacements for commonly used neodymium magnets. These searches are motivated by the volatile prices of rare earth metals and the risk of their resources being exhausted in the long run. The first-principles calculation results obtained in the project will become a signpost in the development of a new generation of permanent magnets. The project members closely collaborate with partners from the Department of Physics and Astronomy of Uppsala University in Sweden. The computational grant at Poznań Supercomputing and Networking Center (PSNC) ensures an effective implementation of the computational tasks.

Research objectives:

The project focus on iron-, cobalt-, manganese- and cerium-based materials and their alloys with 5d-elements. In the project, the selected materials are computer-modelled in an atomic scale using the quantum-mechanical computation methods, called the first-principles calculations. In the project we calculate the intrinsic properties of the bulk materials critical for permanent magnets applications, which are the saturation magnetization, magnetocrystalline anisotropy energy (intrinsic anisotropy) and Curie temperature. The final effect of this project will be the result of broad computational studies which will identify the most promising candidates for the rare-earth free permanent magnets applications from the group of the considered alloys.



We expect that the most promising candidates predicted from first principles can be synthesized and exhibit advantages over the existed rare-earth free materials. Furthermore, the improvement in general understanding of the problem will allow for develop of the new strategies for discovering the new permanent magnets.

Additional information:

1. Research and doctoral thesis will be carried out within the PRELUDIUM BIS 1 project *Future permanent magnets from design* no. UMO-2019/35/O/ST5/02980, funded by the National Science Center;
2. Ph.D. students shall receive a stipend in the gross amount of 5.000,00 PLN, till the month of mid-term assessment and in the amount of 6.000,00 after the month when the mid-term assessment will be performed (the period of receiving the scholarship is 48 months);
3. Ph.D. students shall be subjected to social insurance, pursuant to article, 6 section 1 passage 7b of the act of October 13th, 1998 on the social insurance system (Journal of Laws o 2019, item 300, 303 and 730).

Requirements for candidates:

1. M.Sc. degree in physics or related sciences, or fulfilling the conditions stipulated in article 186, section 2 of the act of July 20th, 2018 Law on Higher Education and Sciences (journal of Laws of 2018, item 1668, as emended);
2. The candidate cannot hold the doctoral degree and be a participant of the doctoral school before entering the competition;
3. The candidate is obligated to obtain his/hers doctoral degree within 12 months from the completion of the PRELUDIUM BIS 1 project;
4. Knowledge in the field of solid state physics and basic skills in programming;
5. Experience in the subject of solid state physics, condensed matter properties, computer physics or applied physics;
6. Ability to use programs supporting research, for example: mathematica, origin, spreadsheet, etc.;
7. Commitment, critical thinking skills, and problem-solving abilities;
8. High motivation for further development, communication skills, and ability to work in a team and individually (the Ph.D. student will carry out a 6-month internship abroad);
9. Fluency in English (both in speech and writing) on the level of B2-C2;
10. Skills which will be an advantage of the applicant:
 - Experience in working with ab initio calculations of magnetic materials and simulations of atomistic spins dynamics;
 - Scientific achievements: co-authorship of publications, internships, and trainings.

Job benefits:

- 6 months of Internship at Uppsala University in Sweden;
- additional funds for participation in conferences and scientific schools;
- work in a young active team (including project leader, post-doc, three PhD students, master student, and bachelor student) which also implements other scientific project (Sonata Bis).

Expected date of employment start: 1st October 2020



Required documents:

1. Application for admission to Poznań Doctoral School of the Institutes of the Polish Academy of Sciences (PDS IPAS) along with the consent for processing personal data upon the recruitment procedure and a statement on having acknowledged the regulations of recruitment for PDS IPAS, using form downloaded from:
[https://www.ibch.poznan.pl/uploads/studium%20doktoranckie/2019/ICHB%20-%20Application%20for%20admission%20\(2019-09\).docx](https://www.ibch.poznan.pl/uploads/studium%20doktoranckie/2019/ICHB%20-%20Application%20for%20admission%20(2019-09).docx);
2. Certified copy of the diploma confirming graduation or a certificate confirming graduation (in the case of diplomas issued by foreign higher education schools, diploma stipulated in article 326, section 2, passage 2 or article 327, passage 2 of the act of July 20th, 2018 – Law on Higher Education and Science (Journal of Laws of 2018, item 1668, as amended), entitling to apply for conferment of a doctoral degree in the state in where such a certificate was issued by the relevant higher education school. In the event when the candidate does not have the aforementioned documents, he/she is obliged to submit them before admission to PDS IPAS. Additional information on foreign school diplomas is available at:
<https://nawa.gov.pl/en/recognition/recognition-for-academic-purposes/applying-for-admission-to-doctoralstudies>;
3. Scientific CV encompassing track record of previous education and employment;
4. A cover letter featuring a short description of research interests, scientific accomplishments, a list of publications, information on involvement in scientific activity (membership of student scientific groups, participation in scientific conferences, completed internships and training courses, prizes and distinctions received) and reasons for wishing to study at the doctoral school;
5. Certificates or other documents confirming the degree of proficiency in English, if the candidate owns such materials;
6. Consent for the processing of personal data for recruitment purposes (Appendix A);
7. Contact details of at least one previous scientific supervisor or another researcher who is entitled to issue an opinion on the candidate.

Documents in other languages than Polish or English should be translated into Polish or English.

Applications should be submitted electronically on e-mail address director@ifmpan.poznan.pl with the subject of the message “*Competition for the Ph.D. position No. 1/2020/07/IFM PAN/PSD*” as the attachment in the pdf file format.

Alternatively, if the electronic delivery is not possible, applications can be sent to the postal address of the Secretariat of the Institute of Molecular Physics, Polish Academy of Sciences.

ul. Mariana Smoluchowskiego 17, 60-179 Poznań, Poland

with an annotation on the envelope: “*Competition for the Ph.D. position No. 1/2020/07/IFM PAN/PSD*”.

Please do not send the originals of the documents.

Recruitment Procedure:

Recruitment will take place in two stages. In the first stage, based on the comparison of applications, the competition for the Ph.D. position in the PRELUDIUM BIS 1 Project will be decided. To start working in the PRELUDIUM BIS 1 project the candidate is obligated to admission to the Doctoral School. The highest-ranking candidates will be invited to a videoconference interview. The candidates will be informed at least 7 days before the planned interview.

Criteria for evaluation of candidates for Ph.D. position in Preludium Bis 1 Project :

The scholarship will be awarded in accordance with the NCN regulations. The Commission will take into account the following criteria:

- competences of candidates for specific tasks in a research project, (70 % of the final grade);
- previous scientific achievements of candidates, including publications in the renowned publishers/scientific journals, (30 % of the final grade).

The scholarship will be awarded to the person who obtains the highest number of points. If the top candidate does not sign the contract, due to the resignation, we reserve the right to choose the next candidate from the ranking list.

Criteria for evaluation of candidates for Doctoral School:

1. Candidate's research achievements, according to the grades obtained in the course of studies, scientific publications, awarded scholarships, and distinctions resulting from conducting scientific research or student activities or other achievements;
2. Candidate's scientific and professional experience, according to participation in conferences, workshops, training sessions and internships, implementation of research and commercial projects, involvement in scientific trusts and societies, international and professional mobility, experience in other sectors, including industry;
3. Candidate's knowledge of the following discipline: physical sciences;
4. Knowledge of the subject matter described in the recruitment advertisement.

The recruitment procedure shall be concluded until September 3rd, 2020.

The description of the recruitment process for Doctoral School is stipulated in the Regulations of Recruitment for PDS IPAS. Following the recruitment procedure, the unadmitted candidates shall be informed on the strong and weak sides of their applications. The recruitment results are public.

For additional information, please contact the Principal Investigator of PRELUDIUM BIS project:

Mirosław Werwiński, PhD
e-mail: werwinski@ifmpan.poznan.pl
phone: +48 (0) 61 8695150

Institute of Molecular Physics Polish Academy of Sciences does not provide accommodation.

DIRECTOR

prof. dr. hab. Zbigniew Trybuła



Information clause:

According to the content of art. 13 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 (General Data Protection Regulation), hereinafter referred to as GDPR, we inform that:

1. The administrator of the collected personal data is the Institute of Molecular Physics of the Polish Academy of Sciences, Mariana Smoluchowskiego 17, 60-179 Poznan, Poland, VAT No. PL 777-00-20-870 (hereinafter referred to as the Institute).
2. The administrator has appointed a Data Protection Inspector who can be contacted in writing, by traditional mail, writing to the Institute's address: Data Protection Inspector, Institute of Molecular Physics of the Polish Academy of Sciences, Mariana Smoluchowskiego 17, 60-179 Poznan, Poland or by sending an e-mail to iod@ifmpan.poznan.pl.
3. Personal data are processed to implement the administrator's tasks related to the recruitment to the Poznań Doctoral School of the Institutes of the Polish Academy of Sciences.
4. The legal basis for data processing is the Act of 26 June 1974 - Labor Code, the Act of 30 April 2010 on the Polish Academy of Sciences, the Act of 20 July 2018 Law on Higher Education and Science, and consent of the data subject.
5. Personal data collected in the current recruitment process will be stored for three months from the moment the recruitment process is resolved. After this period, personal data will be effectively destroyed.
6. Personal data will not be conveyed to a third country.
7. Personal data of the candidate selected in the competition may be made available to third parties authorized under the law.
8. The person whose data is processed has the right to:
 - access to the content of your personal data, demand their correction or deletion, on the terms set out in art. 15-17 GDPR;
 - set restrictions on data processing, in cases specified in art. 18 GDPR;
 - data transfer, on the principles set out in art. 20 GDPR;
 - withdrawal of consent at any time without affecting the lawfulness of the processing that was carried out based on consent before its withdrawal;
 - lodging a complaint to the President of the Office for Personal Data Protection.

Providing personal data in the scope resulting from art. 22 (1) of the Act of 26 June 1974 - Labor Code, is mandatory, providing data in a broader scope is voluntary and requires consent to their processing. Refusal to provide personal data prevents the application from being considered.

Appendix 1

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).

Name

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Date and signature



INSTITUTE OF MOLECULAR PHYSICS
Polish Academy of Sciences