Institute of Physics of the Polish Academy of Sciences
Scholarship for a PhD Student

Job ID: #JOB 70/2021

Job Description

Job Title: PhD student

Job Summary:

The project foresees: study of optical and transport properties of 2D and 3D CdTe/PbTe heterostructures, development of infrared CdTe/PbTe detectors, molecular beam epitaxy of CdTe/PbTe heterostructures; development of experimental setups; data analysis; writing of papers; oral and written presentation of results.

Job Description:

The PhD student will take part in the study of CdTe/PbTe heterostructures for their application as infrared detectors. The CdTe/PbTe quantum structures, with PbTe regions forming quantum wells or quantum dots embedded in the CdTe barriers, are known to exhibit very strong photoluminescence resulting from the large difference in the energy band gaps of the both materials. In addition, the both materials show very large contrast in refractive indexes, what makes the CdTe/PbTe material system particularly attractive for construction of photonic crystals. Photonic crystal is a well-defined nano- or microstructure with periodic distribution of refractive index in one, two or three spatial directions. Within CdTe/PbTe heterosystem (using molecular beam epitaxy) it is possible to obtain all of types photonic structure in the form of CdTe/PbTe multilayers (1D photonic crystal), PbTe (CdTe) nanopilars (2D p.c.) and PbTe (CdTe) dots (3D p.c.) embedded in CdTe (PbTe) matrix. Thus, CdTe/PbTe structures are very promising from point of view of potential applications as an infrared detectors and light sources.

The main objective of the proposed project is: to manufacture (with molecular beam epitaxy technique) and investigate (simulation, optimization) optical (photonic) properties of 2D and 3D CdTe/PbTe structures; building experimental systems and performing optical measurements as well as analyzing and presenting obtained data. We expect that the realization of the project will results, among others, in a development of control and integration methods of CdTe/PbTe structures for new kinds of optical devices (in particular infrared detectors) exploiting simultaneously quantum and photonic properties of this semiconductor system.

Main research field: Physics

Sub Research Field: _Optics of semiconductor structures_____

Career Stage: Master of Sciences in physics; experience in solid state physics; knowledge of optical experimental techniques; basic knowledge of molecular beam epitaxy technique; knowledge of written and spoken English

.

Research Profile (details)**:** _First Stage Researcher_(R1)_____

Type of Contract: __Temporary - 48 months_____

Status: __Full-time_____

Salary: ___5 000_____ PLN per month (untaxed scholarship).

Contact

More information can be obtained from
_dr Michał Szot_____ (e-mail: ____szot@ifpan.edu.pl_____).

Application details

Application deadline: __14.01.2022_ Later applications will be not considered.

Required materials:

- Curriculum Vitae
- List of publications
- Consent to process your personal data

All materials should be submitted in electronic form to the address:
rekrutacja@ifpan.edu.pl with Job ID in the subject.

Information clause – scholarship competition

Pursuant to Article 13 paragraphs 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 (General Data Protection Regulation) Official Journal of the European Union, L 119, 4 May 2016, page 1, as amended, hereinafter referred to as "GDPR", we hereby inform as follows:

1. The Institute of Physics of the Polish Academy of Sciences with its registered office in Warsaw, Al. Lotników 32/46, represented by its Director, is the Controller, i.e. an entity deciding about how your personal data will be used. You may contact the Controller using one of the contact forms available on the website: tel. (22) 116-2111, e-mail: director@ifpan.edu.pl
2. The Director of the Institute of Physics of the Polish Academy of Sciences has appointed the Data Protection Officer (DPO), whom you may contact in matters relating to your personal data, by sending an email to the following address: iodo@ifpan.edu.pl
3. Your personal data will be processed in connection with your participation in the scholarship competition and if you win the competition, in connection with receiving the scholarship – on the basis of your consent – Article 6 paragraph 1 item a GDPR.
4. Your personal data will be processed for a period of 6 months after the end of the scholarship competition and in the case of receiving the scholarship – for a period resulting from legal and tax regulations;
5. Your personal data will be made available to other entities that can finance and settle the scholarship granted and entities authorized under provisions of law. Your data will only be accessed by people authorized by the Controller;
6. Provision of your personal data is mandatory; in the event of failure to do so, you will not be able to participate in the scholarship competition;
7. You have the right to access your data, the right to rectify it and limit processing thereof;
8. You have the right to lodge a complaint to the President of the Office for Personal Data Protection, if you consider that the processing of your personal data violates provisions of the General Data Protection Regulation.

Consent to processing:

☐ I hereby consent to the processing of my personal data contained in the application/request form by the Institute of Physics of the Polish Academy of Sciences to conduct the scholarship competition and in the case of being granted the scholarship, to pay and settle it. I provide my personal data voluntarily and I declare that it is accurate. I have read the content of the information clause.

……

Date and signature