



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



Job ID: #JOB23/2017

Job Description

Job Title: PhD student in physics

Main research field: Physics

Sub Research Field: Magnetism

Career Stage: Early stage researcher or 0-4 yrs (Post-graduate)

Research Profile ([details](#)): First Stage Researcher (R1)

Type of Contract: Temporary for two years

Salary: 3800 PLN per month (untaxed scholarship)

We are looking for a candidate ready to join the team of young scientists to collaborate in the project POWROTY funded by Foundation for Polish Science: "*Modifications of magnetic properties of ultrathin film structures - towards magnonic crystals.*"

The project will be realized at the Group of Magnetic Heterostructures (ON 3.4) in the Institute of Physics of the Polish Academy of Sciences. We work in a new research area called magnonics, the modern and current trend in world science. It is an exciting field for exploring new phenomena and a chance for a candidate to start a scientific career in this new branch of physics.

In the planned investigations we will be focused on fabrication and investigations of materials with spatially distributed magnetic properties. It can serve as a medium in which magnetization fluctuations in the form of spin waves can propagate. Dynamic phenomena are currently very attractive for both basic and applied research. The waveform can be used in practice as a carrier of information encoded in wave parameters (frequency, amplitude). The control of the spin wave propagation is possible by the fabrication of appropriate metamaterials (magnonic crystal). The parameters of the spin wave can be tuned by the designing the parameters of the medium in which it propagates. This is the general purpose of our project. Our aim is to produce and investigate the magnetostatic and dynamic properties of magnetic multilayer systems with periodically modified magnetic properties, possessing features of magnonic crystal. Changes in the magnetic properties will be realized in epitaxial systems with ultrathin magnetic Co layer, by local, periodic ion irradiation or creating a regular striped domain structure.

If you join our team, we will expect your full engagement in the project realization. We appreciate creativity, responsibility, and open attitude, especially when dealing with complex research problems.

Your main responsibilities will include:

- Performing magnetic measurements using the VNA-FMR (*Vector Network Analyzer-Ferromagnetic Resonance*) method and analysis of the obtained results.

- Participation in the process of obtaining of magnonic crystals (work with the MBE (*molecular beam epitaxy*) system and in the procedure of introducing magnetic modulation - ion beam irradiation).
- Participation in writing scientific publications.

We guarantee:

- the young team involved in an ambitious scientific project
- work with high quality, complex, laboratory equipment
- cooperation with the best magnetism research groups in Poland, and cooperation with foreign institutions
- participation in international conferences and workshops
- support in scientific work and great opportunities for scientific development
- attractive salary
- know-how of applying for co-financing of own projects

We require:

- Master's degree in one of the following disciplines: physics, solid state physics, materials engineering, or related.
- At least a good grade on the diploma.
- Experience in solid state physics (or related) laboratory work.
- Ability to handle and data analysis in software like Mathematica, OriginPro.
- Very good English, spoken and written, at least at B2 level.
- Ability to work in an interdisciplinary team.

Appreciated skills:

- Experience in FMR (*Ferromagnetic Resonance*) and/or VNA-FMR (*Vector Network Analyzer-Ferromagnetic Resonance*) measurements.
- Experience in work with high vacuum systems.
- Knowledge of lithographic methods.
- Programming skills in at least one of programming languages as e.g.: Python, LabView, C++ / C #.
- Participation in research internships, conferences, workshops, student exchanges.

Contact

More information can be obtained from dr Ewelina Milińska (e-mail: esieczko@ifpan.edu.pl);

Application details

Application deadline: **15.10.2017**. Later applications may not be considered.

Required materials:

- Curriculum Vitae
- List of publications, conference presentations and other achievements (if any)
- Letter of motivation
- Transcript of record from undergraduate studies
- Reference: at least one reference with information of contact person(s) (with phone number(s) and e-mail address(es))

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