



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



Job ID: #JOB 16/2022

Job Description

Job Title: PhD student – scholarship holder

Job Summary:

Relation between physical properties and atomic structure of bundles of carbon nanotubes filled with magnetic halide phases .

Job Description:

The project is devoted to the advanced molecular scale structures, consisting of bundles, 2D and 3D networks of aligned carbon nanotubes filled with highly crystallographically aligned magnetic halide phases. Due to the pressure of the walls of the nanotubes, the classic limits of thermodynamics of crystals can be exceeded using this type of approach. We assume that the cleaned, refined and oriented filled nanotube bundles will create magnetic 2D and 3D superstructures which will have unusual magnetic properties. We propose for Ph.D. candidate, a research program concerning, determination of atomic structure of single walled carbon nanotubes (i.e. SWCNTs) using in particular metal halides of iron and others transition metals, using advance Transmission Electron Microscopy methods coupled with numerical modeling and image simulation. In following, linking this atomic structure with magnetic and optic properties of such nanostructures .

The project, will be carried out in the frame of NCN project “In-situ TEM determination of the structure and nanomagnetism of bundles of carbon nanotubes filled with aligned magnetic phases” performed in scientific cooperation with the University of Warwick . More information about NCN project can be found <https://ncn.gov.pl/sites/default/files/listy-rankingowe/2021-03-15bhga1/streszczenia/523873-en.pdf>

Requirements:

- the master degree in physics or chemistry or nanotechnology,
- programming skills in one of the languages: Python, C++ or similar,
- sufficient proficiency in English,
- knowledge of crystal structures of nanomaterials,
- the ability to use the transmission electron microscope is an additional advantage.

To be employed, the candidate must be accepted into the PhD school in which the Institute of Physics participates. Applications for the position are through recruitment to the School, online at warsaw4phd.eu.

Main research field: Physics

Sub Research Field: Solis State Physics

Career Stage: Early stage researcher

Research Profile: First Stage Researcher (R1)

Type of Contract: Fixed term (45 months)

Status: Full-time

Salary: grant funding of **5000** PLN per month, before subtracting obligatory employer and employee social security contributions (~15%).

Contact

More information can be obtained from

e-mail: kret@ifpan.edu.pl

Please make contact.

Application details

Application deadline: 04.06.2022. Applications submitted later will not be considered.

Required materials:

- Scientific CV
- Cover letter
- Scan of M.Sc. diploma or equivalent (or an explanation of when one is expected)
- Academic record (for finalized semesters)
- Recommended: A recommendation letter by an academic, or their contact email.

All materials should be submitted in electronic form by application to the PhD school warsaw4phd.eu, choosing the project: "Synthesis and structural investigation of bundles of carbon nanotubes filled with magnetic halide phases". The application system will be active from 21 May 2021.

Results regarding the position will be made available by July 6, 2022.