



# Institute of Physics of the Polish Academy of Sciences

## Scholarship for a PhD Student



**Job ID: #JOB65/2021**

### Job Description

**Job Title:** PhD student – scholarship holder

**Job Summary:**

Synthesis and structural investigation of bundles of carbon nanotubes filled with magnetic halide phases (experimental).

**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 program of research to synthesis, refine, align and characterize the formation of aligned magnetic phases in of single walled carbon nanotubes (i.e. SWCNTs) using in particular metal halides of iron and others transition metals. The main characterization method will be Transmission Electron Microscopy .

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,
- ability to work in a chemical laboratory,
- sufficient proficiency in English,
- knowledge of the basics of crystallography,
- 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](http://warsaw4phd.eu). Recruitment can be left without giving any reasons.

**Main research field:** Physics

**Sub Research Field:** Solid 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](mailto:kret@ifpan.edu.pl)

Please make contact.

## Application details

**Application deadline: 04.01.2022** Later applications will not be considered.

### Required materials:

- Scientific CV
- Cover letter
- Scan of MsC 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](http://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 December 2021.

Results regarding the position will be made available by 11 February 2022.