

PHD STUDENT IN THE DOCTORAL SCHOOL – CALL FOR APPLICATIONS

Position: PhD student in Physics discipline

Unit of the project realization: Faculty Science and Technology – University of Silesia in Katowice

Unit realizing the PhD student education: Doctoral School at the University of Silesia in Katowice

Preparation of ionic nanocomposites; Studies of thermodynamic properties of ionic liquids and ionic nanocomposites by using standard and temperature modulated DSC measurements; Performing PVT experiments; Analysis of the obtained results; Preparing the publications; Presentation of the obtained results at international conferences.

Research will be carried out in the frame of the project 2021/41/B/ST5/00840, financed from National Science Center under management of dr hab Zaneta Wojnarowska.

Duration of the scholarship: 36 months

Scholarship amount: 5000 PLN total gross

Project description:

Nanocomposites are multicomponent materials in which at least one phase has nanoscale morphology with dimensions less than 100 nm. These materials attract much attention in drug delivery, optics, electrics, magnetism, ceramics, and catalysis. Additionally, they are of particular interest for the application as electrolytes in batteries and fuel cells. They are less flammable and leak-free than conventional liquid single-component electrolytes and, therefore, much safer. Nevertheless, before their commercial use, there is a need to develop and systematize knowledge about the thermodynamic and dynamic properties of these substances, especially under high-pressure conditions. This project is devoted to a thorough understanding of the thermodynamics and dynamics of ionic nanocomposites. To realize this goal, we will perform unique studies of phase transition and transport properties of many ionic nanocomposites in an extensive range of temperatures and for the first time at high pressure (up to 0.5 GPa). PhD student will be responsible for: preparation of ionic nanocomposites; studies of thermodynamic properties of ionic liquids and ionic nanocomposites by using standard and temperature modulated DSC measurements; performing PVT experiments; analysis of the obtained results; preparing the publications; presentation of the obtained results at international conferences.

Requirements:

1. Master in physics/chemistry/biotechnology/engineering or similar
2. Good communication & writing in English
3. An ability to prepare a scientific manuscript
4. Motivation for experimental work
5. Interest in science

Required documents:

1. CV (curriculum vitae),
2. Motivation letter,
3. List of publications and conferences,
- 4 Recommendation letter

Candidates should register in IRK system and select „Doctoral School – admission to a grant”.

Documents should be delivered till **15.03.2023** to an e-mail: zaneta.wojnarowska@us.edu.pl

In case of any questions, before the formal application please contact to the grant leader for the e-mail address given above.

Documents will be rated by the commission, led by the project leader. Admission will be carried out according to the NCN regulations. Admission can be carried out both in Polish and in English. Meeting will be organized on **16.03.2023** in the Doctoral School office / on-line. Final decision will be sent to candidates via e-mail till **20.03.2023**.