

## Competition notice

Project title: “Synthesis and characterization of novel 2D hybrid materials for supercapacitors”, acronym HYSUCAP

Principal Investigator: prof. Johannes Ehrenfried Zschech

Project description:

establishing a general understanding of the stability of the relationship between the electrochemical properties and microstructure of novel 2D hybrid materials in order to optimize performance and stability of supercapacitors;

- development of a model for the modelling of materials aging and degradation processes during the use of the materials in SC device based on electrochemical methods and insitu microscopic studies of kinetic processes of novel material;
- programming of software for the simulation of degradation processes in 2D hybrid materials in dependence on specific conditions;
- discussion, evaluation and publishing scientific results jointly with team members providing experimental data;
- presentation of scientific results in cross-disciplinary teams.

### Requirement

- MSc. degree in Materials Science, Physics or Chemistry;
- experience in solid state or materials characterization;
- very good knowledge and experience in Computational Science;
- strong programming skills in methodological development of computational tools;
- scientific communication skills;
- ability to engage in cross disciplinary teams;
- very good command English.

**Discipline:** Chemical Sciences

**Admission limit:** 1

### Recruitment schedule

- registration in the Internet Registration of Candidates, referred to as “IRK”, submitting an application to the IRK: 23.11.2020 – 10.12.2020
- qualification procedure: 14.12.2020-17.12.2020
- announcement of the ranking list: until 21.12.2020
- accepting documents from qualified candidates: 22.12.2020-27.01.2021
- announcement of the list of accepted candidates: until 31.01.2021

### Recruitment fee

150 PLN

### Form of the selection procedure

Evaluation of the following elements shall be taken into account in the selection process:

- 1) the research project proposed by the candidate;
- 2) scientific activity of the candidate based on a CV or resumé, documented with scans of materials attached to the application for admission to the School;
- 3) interview with the candidate;

### **Language of the selection process, including the interview**

The interview shall be carried out in Polish or English – in accordance with the candidate's preferences presented in IRK. If the Polish language is selected, the interview may include parts in English.

### **Required documents**

The candidate shall submit the application for admission to the School only in IRK. It shall include:

- 1) the application for admission to the Doctoral School;
- 2) scan of a diploma of completion of the long-cycle Master's degree programme or second-cycle programme or an equivalent diploma obtained under separate regulations or –in the case of candidates pursuing education within the European Higher Education Areas –a declaration that the diploma or certificate of obtaining a Master's degree shall be provided by 27 January 2021, in the case of holding a diploma equivalent to the diploma of completion of the long-cycle Master's degree programme or second-cycle programme, the candidate shall justify this equivalence;
- 3) a description of the initial research project proposal in English;
- 4) a resumé or curriculum vitae containing information about scientific activities, including scientific interests and scientific achievements during five calendar years preceding the submission of the application, subject to § 18 s. 5, in particular publications, research and organisational work in scientific associations, participation in scientific conferences, participation in research projects, awards, distinctions, research internships, completed training courses on research skills, science popularisation activities, activities in bodies representing scientific societies, professional career;
- 5) scans of materials confirming scientific activities referred to in the resumé or CV;
- 6) a document confirming the command of English at least at B2 level or declaration about the command of English to the extent enabling the education in the school;
- 7) a scan of the declaration of the supervisor candidate about their willingness to be the candidate's supervisor and the number of doctoral students, for whom they are appointed as the supervisor, in accordance with the template determined by the Rector; additionally, the candidate can enclose a scan of the opinion of the supervisor candidate and opinions of other academic staff on the candidate and their scientific activities or the proposed research project;
- 8) one photograph of the candidate's face, allowing their identification;
- 9) declaration whether the candidate is or was a doctoral student or participant of doctoral studies, and if yes – title of doctoral dissertation or the research project prepared by the candidate, as well as first name and surname of the academic tutor or the supervisor;
- 10) declaration on familiarising themselves with the content of the Resolution, as well as Article 40 and Article 41 of the Code of Administrative Procedure;
- 11) scans of transcripts of records of the first and second cycle programmes, the long-cycle Master's degree programme or equivalent documents (e.g. diploma supplement);

- 12) abstract of the master's thesis or draft master's thesis in English (up to 3,000 characters with spaces);
- 13) other documents in form of scans: letter of recommendation from a scientist who knows the candidate

### **Evaluation criteria**

While ranking candidates, following criteria are taken into account:

1. Preliminary evaluation of the research project proposal (0-5 points);
2. Assessment of experience necessary to work in a research project, including scientific achievements (0-35 points) ;
3. Interview (0-60 points)
  - Checking the candidate's knowledge and skills in the discipline of Chemical Sciences;
  - conversation about the research project, candidate's understanding of the research topic;
  - a series of short questions about the presented scientific achievements and questions about the course of studies;
  - questions pertaining to information included in letter of recommendations, including nature and results of cooperation of the candidate with authors of these letters;
  - questions pertaining to the other information included in the documentation submitted by the candidate;

### **Education program**

The education lasts 4 years. It includes obligatory classes (no more than 300 hours in total during the whole period of education) and the implementation of an individual research program, carried out under the supervision of a supervisor. Beginning of education - March 1, 2021.

### **Scholarships**

The scholarship is PLN 4500 gross-gross (for the duration of the research project). After its completion, PhD student receives a scholarship in the amount provided for in the general regulations.