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Warsaw, 20.03.2023

WCH.1210-1/2023

### **An announcement for Postdoc position**

Position of adjunct (a group of science positions) in the project entitled "**H-ionic: Ionic liquid-based electrolytes for charging hybrid, hydrogen storage systems**" financed by National Science Centre is open for application.

**Project leader:** Prof. dr. hab. Andrzej Czerwiński

**Location of the project:** Faculty of Chemistry, University of Warsaw

The post-doc (adjunkt in a group of science positions) will run a research in exact and natural sciences, in discipline of chemistry.

**Available positions:** 1.

#### **Aims of the project:**

The main objective of this study is the elaboration of the ionic liquid-based electrolytes suitable for the protonic rechargeable systems (PRS), which will allow to develop high-power, high voltage and safe systems. The scope of the study will be focused on the synthesis of variety of composition of ionic liquids. Synthesized ionic liquids or their mixtures with potassium hydroxide will be used as electrolytes. The electrochemical properties of ionic liquid-based electrolytes will be examined with the use of standard Ni-MH anode material such as AB5 or AB2 alloys as well as in high hydrogen capacity alloys such as magnesium and zirconium/titanium AB<sub>3</sub>/A<sub>2</sub>B<sub>7</sub> alloys. Hydrogen storage alloys will be also surface modified with Pd nanoparticles to enhance the kinetics of hydrogen electrosorption process and facilitate the activation process. The final result of the project will be the elaboration of the specific system of anode material and ionic liquid-based electrolyte for the efficient, further application in protonic batteries. The choice of the most effective system will be the compromise between the most corrosion resistant material, the least corrosive ionic liquid, high capacity and long cyclic life.

#### **We are looking for motivated candidates:**

- with a PhD degree in chemistry, materials science or related,
- with very good efficiency in English (spoken and written),
- with at least 5 years of proven experimental experience, especially in the field of electrochemistry
- with experience in chemical synthesis (especially surface modification with nanoparticles of metals) and electrochemistry of ionic liquids,
- experience in testing hydrogen storage materials will be an advantage
- with strong experience in data analysis (including data analysis in OriginLab, spectral and microscopic data analysis),
- experience in physical and chemical characterization of materials (including XRD, SEM, EDX, BET, XPS i TEM) will be an asset



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- having teamwork skills
- innovative, open-minded and creative confirmed with previous experience,
- working at a high, international level, confirmed by publications in high impact scientific journals from the JCR list.

The candidate must meet the requirements of art. 113 of the Act - Law on Higher Education and Science dated July 20, 2018 (Journal of Laws of 2022, item 574).

**Main duties:**

- running scientific research within scope of the project at the high, international level,
  - preparation of electrode samples for measurements (surface modification of AB-type alloys with Pd nanoparticles)
  - preparation of the half-cells, conducting the electrochemical tests in ionic liquids and the mixtures of ionic liquids with alkaline electrolyte
  - physicochemical characteristics of ionic liquid electrolytes
  - detailed analyses on spectral, diffraction and morphological data using advanced calculation techniques and verification of scientific hypotheses.
- keeping a detailed scientific documentation of the project results in English and regular reporting,
- preparing at least two scientific manuscripts and at least one conference presentation created during the project (within the first 12 months from hiring date),
- publishing at least one scientific article created during the project (within the first 12 months from hiring date),
- guiding/supervising students within the project

**Required documents:**

- 1) Curriculum Vitae (CV) and motivation letter (both in English)
- 2) Copy of PhD diploma ( or certificate) in chemistry, physics, materials science or related.
- 3) Information on the processing of personal data (the template available at: <http://www.chem.uw.edu.pl/oferty-pracy/> ).
- 4) Declaration of reading and acceptance of the rules for conducting competitions at the University of Warsaw (a template available at: <http://www.chem.uw.edu.pl/oferty-pracy/> ).
- 5) List of scientific publication and/or patent applications/patents/utility models and description of three most important scientific achievements of the candidate (max. 2 pages in English).
- 6) List of scientific and/or R&D grants or other research projects with specification of the role of the candidate in these undertakings.
- 7) Two opinions on the candidate's research activity sent **directly** to the following e-mail address: [aczerw@chem.uw.edu.pl](mailto:aczerw@chem.uw.edu.pl) by two persons with the degree of habilitated doctor or the professor title (the opinion of persons working in an equivalent position abroad is allowed).



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- 8) Information about the research internships (domestic and foreign), stating the duration of the internship and description of the most important techniques the candidate has learned.

**Starting date:** June 2023

**Salary:** PLN 9230 gross-gross/month

**We offer:**

a full-time employment contract for 24 months. Work from 9 AM to 5 PM.

**Deadline of submission:** 19.04.2023

**Document submission methods:**

Please submit the documents in one .pdf (except position 7.) **no later than 2 PM on 19 April 2023** to: **aczew@chem.uw.edu.pl**. E-mail entitled: "Name\_Surname\_adiunkt\_OPUS".

First, the competition committee determines the compliance of the documents submitted by the candidates with the requirements specified in this notice. Candidates will be notified few days in advance of the on-line meeting date with the competition committee.

After the end of the session, the competition committee presents the candidate evaluation report to the Dean of the Faculty of Chemistry at the University of Warsaw, who applies to the Council of the Faculty of Chemistry at the University of Warsaw for a positive evaluation for selected candidate. The decision of the competition committee will be presented to the candidates by e-mail / by phone by 5.05.2023.

The competition is the first stage of the employment procedure as an academic teacher, and its positive outcome is the basis for further proceedings.



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