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Warsaw, 28.04.2022

WCH.1210-9/2022

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

Position of adjunct (a group of science positions) in the project entitled "**Development of a procedure using *in-situ* and *ex-situ* methods to analyze electrode material properties over lithium-ion battery cycles.**" financed by National Science Centre is open for application.

**Project leader:** Dr. Dominika Buchberger

**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:**

This project focuses on non-invasive, highly responsive, and sensitive measurements using Raman microspectroscopy, X-ray diffraction, and electron microscopy. Each of those *in situ* or *ex situ* techniques will give unique information on the changes occurring at the electrode side during or after battery testing. This research will cover detailed structural and morphological changes during battery operation like so-called electrode formation mechanism, long-term cycling issues in connection to the applied current rate, determination of safe operational electrochemical window and charging practice, stability of electrode structure, and possible decomposition mechanisms, electrode-electrolyte interactions, etc. This research will lead to the development of a novel analytical procedure that could be applied in the battery "health" diagnostics through a rapid *in situ* Raman method inside the cell. This complementary research will give a full picture of the material stability and battery safety issues and will provide fundamental, but typically overlooked, answers alongside popular fast-paced research for the best performing battery.

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

- with a PhD degree in chemistry, physics, materials science or related,
- with very good efficiency in English (spoken and written),
- with at least 5 years of proven experimental experience, especially using a glove box. Additional experience in research of lithium battery material is highly desirable,
- with strong knowledge in solid state chemistry or physics or materials engineering,
- with experience in chemical synthesis (especially inorganic such as wet chemical or solid-state methods),



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- with strong experience in physical and chemical characterization of materials (including XRD, Raman, SEM, EDX; additional experience in BET, XPS i TEM is a bonus),
- with strong experience in data analysis (including Rietveld refinement for diffraction data, data analysis in OriginLab, spectral and microscopic data analysis),
- with knowledge in DFT (or related) calculations in solid state will be a bonus
- 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 in situ and ex situ measurements (including chemical syntheses and electrochemical pretreatment)
  - collection of Raman spectral, X-ray diffraction, SEM imaging data
  - creative designing and execution of in situ and ex situ examinations of battery materials,
  - 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 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/utility models and description of three most important scientific achievements of the candidate (max. 2 pages in English).



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- 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: [d.buchberger@uw.edu.pl](mailto:d.buchberger@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).
- 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:** July 2022

**Salary:** PLN 10000 gross-gross/month

**We offer:**

a full-time employment contract for 12 months with the possibility of extension with the University of Warsaw. Work from 9 AM to 5 PM.

**Deadline of submission:** 28.05.2022

**Document submission methods:**

Please submit the documents in one .pdf (except position 7. ) **no later than 2 PM on 28.05.2022** to: [d.buchberger@uw.edu.pl](mailto:d.buchberger@uw.edu.pl) . E-mail entitled: "Name\_Surname\_adiunkt\_SONATA\_BIS".

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 13.06.2022.

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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