



# DOMINIKA ZIÓŁKOWSKA

Doctor of Engineering, Research Scientist



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## OBJECTIVES

- Create a motivated team working on new energy storage and conversion systems.
- Contribute innovative solutions to key challenges in the battery and EV fields.
- Develop new and effective energy storage materials for EV industry.

## EXPERIENCE

- 2018 – now **Assistant Professor**, Faculty of Chemistry, University of Warsaw, Poland
- 2017 – 2018 **Research Associate**, University of Louisville, USA
  - Worked on the novel electrolyte materials for lithium battery.
  - Gained knowledge on preparation and characterization of solid-state electrolytes.
  - Discovered new preparation method of Li<sub>7</sub>PS<sub>6</sub> and Li<sub>6</sub>PS<sub>5</sub>X materials.
- 2016 – 2017 **Scientific Project manager**, Mobility Plus program (Poland), University of Louisville, USA
  - Managed supercapacitor material design project.
  - Submitted International Patent Application.
  - Qualified in TEM operation and microscopic data analysis.
  - Gained collaboration with 3 external institutions.
  - Completed 3 courses in technology transfer and entrepreneurship.
  - Trained students on advanced characterization techniques.
- 2012 – 2015 **Project researcher** of scientific grant in Li battery development, University of Warsaw, Poland
  - Characterized modified LiMn<sub>2</sub>O<sub>4</sub> and Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> materials.
  - Contributed feedback for new material design iterations.
  - Developed strong teamwork skills while collaborating with 5 scientific institutions.
  - Gained deep knowledge on advanced Raman microscopy in solid state physics.
  - Tutored undergraduate students.
- 2012 & 2014 **PhD Intern**, University of Louisville, USA
  - Learned advanced characterization methods (SEM, XRD, XPS).
  - Designed *in situ* experiments on battery materials using XRD and TEM methods.
  - Prepared technical manuals for *in situ* XRD procedures.
- 2011 **PhD Intern**, Tatung University, Taiwan
  - Designed LiFePO<sub>4</sub> battery materials within industrial environment of Tatung Company.
  - Learned battery material preparation, assembly (coin and pouch cell), basic characterization and electrochemical testing.
- 2010 **Student Intern**, Chalmers University of Technology, Sweden
  - Completed Master Thesis project on *in situ* studies for PEMFC using Raman spectroscopy through “MESCC” European Master Program.

## EDUCATION

- 2016-2018 **Post-doctoral Research**, Conn Center for Renewable Energy Research, University of Louisville, USA
- 2010-2016 **PhD in Solid State Physics, International PhD Studies, Faculty of Physics**, University of Warsaw, Poland.
  - Defended: 07 December 2015      Academic title received: 16 January 2016
  - PhD Thesis title: “Physical Investigations of Nanomaterials for Lithium-Ion Batteries.”

- 2008-2010 **MSc. in Chemistry, "Materials for Energy Storage and Conversion"** European Master Program: Université de Provence in Marseille, Université Paul Sabatier in Toulouse, Université de Picardie Jules Vernes in Amiens (France), Universidad de Córdoba (Spain), Warsaw University of Technology (Poland), Chalmers University of Technology (Sweden).
- 2005-2010 **MSc. Eng. in Chemical Technology**, Warsaw University of Technology, Poland.  
Title: "In situ studies of proton-exchanged membrane for fuel cells using Raman spectroscopy."  
Defended: 14<sup>th</sup> September 2010 (Amiens, France) and 28<sup>th</sup> October 2010 (Warsaw, Poland).

## ACHIEVEMENTS

- 15** Scientific Publications with 166 total citations.
- 16** Presentations at international conferences. 5 oral presentations at:
  - 68<sup>th</sup> Annual International Society of Electrochemistry Meeting in Providence, RI (USA) – 2 talks
  - 19<sup>th</sup> International Conference of Solid State Ionics, Kyoto (Japan)
  - Spectroelectrochemistry 2012, Dresden (Germany)
  - 14<sup>th</sup> International Conference on Nanosciences & Nanotechnologies, Thessaloniki (Greece)
- 1** Pending Patent Application.  
Methods for synthesizing carbon nanocages, Filed Sep 14, 2016, PCT/US2016/051730.
- 9** Scholarships (Poland, France)
  - Laureate of the "Mobility PLUS" Program (IV Edition), Ministry of Science and Higher Education, Poland (2016)
  - Scholarship for the best PhD students at the Faculty of Physics University of Warsaw from the subjective subsidy by the Polish Ministry of Science and Higher Education (2013, 2014)
  - Scholarship through "Development of science - development of the region - scholarships and accompanying support for Mazovian doctoral students", Marshal of the Mazovian Voivodeship, Poland (2013)
  - Scholarship within International PhD Studies at the Faculty of Physics, Foundation for Polish Science, International PhD Program (2010)
  - Student Scholarship, Conseil Régional de Picardie, France (2010)
  - ERASMUS Scholarship, Warsaw University of Technology and Université de Provence (2008,2009)
  - "Materials of Energy Storage and Conversion" Scholarship, ALISTORE European Research Institute (2008)
- 7** Grants and projects.
  - Electrochemical Energy Storage, NSF Experimental Program to Stimulate Competitive Research (EPSCoR): „Powering the Kentucky Bioeconomy for Sustainable Future", University of Louisville (2017-2018) – **main scientific subproject researcher** on solid state electrolytes for lithium batteries.
  - Carbon Nanocages as cost-effective, efficient and durable HER electrocatalyst, UofL National Science Foundation (NSF) Innovation Corps Program (2016) – **main development project executor**.
  - Fabrication and Development of Novel 3D Carbon-Based Microporous Electrodes for High Performance Energy Storage Applications, University of Warsaw/University of Louisville, Mobility Plus program, supported by Ministry of Science and Higher Education, Poland (2016-2017) – **scientific project manager**
  - Research and development on modern technology of Li-polymer batteries with increased operating safety, University of Warsaw, supported by the National Center for Research and Development, Poland, Grant No. PBS1/A1/4/2012. (2012-2015) – **main scientific project researcher**.

- Nanomaterials for Li-ion batteries, International PhD Program, supported by Foundation for Polish Science (2010-2014) – **scientific project researcher**.
- Laboratory equipment for the characterization of materials used in renewable energy technologies, University of Warsaw, supported by Fund for Polish Science and Technology, Ministry of Science and Higher Education, Poland (2012-2014) – **main project executor**.
- Laboratory accessories and chemicals for glove box equipment, Minigrant for PhD Students of Faculty of Physics, University of Warsaw (2012) – **scientific project manager**.

**5** Courses and 13 certifications in technology transfer, entrepreneurship, project management, leadership, teaching and programming.

**6** International Internships (USA, Taiwan, Sweden) with ~4 total number of years abroad.

**3** Laboratories designed and equipped for battery research at the University of Warsaw. Co-supervisor of an undergraduate student (B.Sc. thesis defended in September 2016). Reviewer at J. Power Sources and Electrochimica Act. Finalist of 51<sup>st</sup> Polish Chemistry Olympics (2005).

## EXPERTISE



**Chemistry:** wet chemistry, solid-state chemistry and physics, surface chemistry, electrochemistry, materials science, nanomaterials, nanocomposites, oxide, sulfides, phosphates, thiophosphates, carbon and 2D materials.



**Advanced Material Characterization:** microscopy: SEM, TEM; spectroscopy: EDX, EELS, XPS, Raman spectroscopy, FTIR, ICP-MS; diffraction: SAED, XRD; surface and thermal methods: BET, TGA, DSC.



**Electrochemical characterization:** battery/ supercapacitor assembly, battery/ supercapacitor galvanostatic/ potentiostatic, testing, fuel cell components testing, CV, EIS.



**Data analysis and software:** spectroscopic, diffraction, and microscopic data analysis, OriginLab, Microsoft Office, Renishaw Wire 3.4, Digital Micrograph, DIFFRAC.EVA, Celref, XPSPEAK 4.1, Chems sketch, Jabref.



**Individual skills:** collaboration, teamwork, self-guidance, self-motivation, self-learning, multi-tasking, analytical thinking, scientific writing, adaptability, project management, native Polish, fluent English, basic Spanish

## SKILLS

## ADDITIONAL ACTIVITIES

From 2017	Member of Google's Women Techmakers.
2016-2017	Training for PhD students and company employees on advance characterization equipment and data analysis at the Conn Center for Renewable Energy Research, University of Louisville, USA
2010-2013	Teaching experience: 2 semesters of „Chemical laboratory" for second-year biophysics students at the Faculty of Physics, University of Warsaw (135 h).
2007-now	Member of Warsaw University of Technology Academic Choir.
2007-2010	Mentoring international students from Erasmus ATHENS Program, Erasmus Mundus Master MESC Program (Class#4, and #5).