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Linxiao Geng

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PROFESSIONAL EXPERIENCE

Staff scientist

Oak Ridge National Lab

January 2019-present

- Leading high energy high voltage cathode materials development for Li-ion battery at ORNL.

Postdoctoral research associate

University of Virginia

September 2017-December 2018

Advisor: Dr. Gary M. Koenig Jr., Department of Chemical Engineering, University of Virginia

- Developing LFP (lithium iron phosphate) aqueous electrode processing to reduce cost for Li-ion battery.
- Prototyping DPR (dispersed particle resistance) test cell for fast Li-ion battery active material screening as an indicator for rate capability.
- Developing DPR test protocol for Li-ion battery cathode materials (LCO, NCM) in aqueous electrolyte.
- Developing electrochemical impedance spectroscopy (EIS) for dispersed particle system.

Graduate student researcher/lab safety officer

University of California, Riverside

September 2013-September 2017

Advisor: Dr. Juchen Guo, Department of Chemical and Environmental Engineering, University of California, Riverside

- Initiated and led pioneering research on developing rechargeable Al-ion battery prototypes.
- Participated with major role in 1) Li-ion battery projects on developing stable Li metal anode and high-performance Si/C anode; 2) Mg-ion battery projects on developing highly stable electrolytes.
- Highly skilled in various techniques in material synthesis, electrochemistry, battery technology, materials characterization, etc.
- Make sure the lab is under Cal/OSHA guidelines; Delegate to communicate with EHS; Manage SOP, MSDS, chemical inventory and waste disposal.

EDUCATION

Ph.D., Chemical and Environmental Engineering

September 2013-September 2017

University of California Riverside

Dissertation title: Reversible Electrochemical Intercalation of Aluminum in Transition Metal Sulfides

Bachelor of Science, Environmental Chemistry

September 2008-June 2012

Nankai University (graduate with high honors)

Thesis title: Electrochemically Assisted Pd/Au as Catalyst on the Dechlorination of TCE

TEACHING/MENTORING EXPERIENCE

Research Mentor

- (Sep 2017-Dec 2018) – Sonia Foley – Dispersed particle resistance analysis on LCO and NCM (UVA)
- (Sep 2017-Jul 2018) – Matthew Denecke – prototyping flow cell for Li-ion materials electrochemical analysis (UVA)
- (Sep 2016-Sep 2017) – Gustavo Salazar – Aluminum ion battery materials (UCR)
- High school students summer interns: Brittany Aikin (West Point), Stephanie Sanchez (Columbia), Judy Blanco (UCR), Raquel Jaime (UCR), Kennedy Hill (UCLA), etc.

Teaching Assistant, Department of Chemical and Environmental Engineering, UCR

- Introduction to Nanoscale Engineering (Winter 2014)
- Introduction to Chemical and Environmental Engineering (Winter 2015)
- Nanotechnology Processing Lab (Spring 2017)

PUBLICATIONS

1. **Linxiao Geng**, Guocheng Lv, Xuebing Xing, Juchen Guo, “Reversible Electrochemical Intercalation of Aluminum in Mo₆S₈” *Chem. Mater.* 2015, 27, 4926-4929.
2. **Linxiao Geng**[†], Jan P. Scheifers[†], Jian Zhang, Boniface Fokwa, Juchen Guo, “Crystal Structure Transformation in Chevrel Phase Mo₆S₈ Induced by Aluminum Intercalation” *Chem. Mater.* 2018, 30, 8420-8425. (†co-first author).
3. **Linxiao Geng**, Matthew E. Denecke, Sonia B. Foley, Gary M. Koenig Jr., “Electrochemical Characterization of Lithium Cobalt Oxide within Aqueous Flow Suspensions as an Indicator of Rate Capability in Lithium-Ion Battery Electrodes” *Electrochimica Acta*, 2018, 281, 822-830.
4. **Linxiao Geng**, Jan P. Scheifers, Chengyin Fu, Jian Zhang, Boniface Fokwa, Juchen Guo, “Titanium Sulfides as Intercalation-Type Cathode Materials for Rechargeable Aluminum Batteries” *ACS Appl. Mater. Interfaces* 2017, 9, 21251-21257.
5. **Linxiao Geng**, Sonia B. Foley, Hongxu Dong, Gary M. Koenig, Jr. “LiFePO₄ Accelerated Change in Surface and Electrochemical Properties in Aqueous System Induced by Mechanical Agitation” *Energy Technology* <https://doi.org/10.1002/ente.201801116>.
6. Scott McArthur[†], **Linxiao Geng**[†], Juchen Guo, Vince Lavallo, “Cation Reduction and Comproportionation as Novel Strategies to Produce High Voltage, Halide Free, Carborane Based Electrolytes for Rechargeable Mg Batteries” *Inorg. Chem. Front.* 2015, 2, 1101-1104 (†co-first author).
7. Liming Wang, Zimeng Zhang, **Linxiao Geng**, Tianyu Yuan, Juchen Guo, Lei Fang, Jingjing Qiu, Shiren Wang, “Solution-printable fullerene/TiS₂ organic/inorganic hybrids for high-performance flexible n-type thermoelectrics” *Energy Environ. Sci.* 2018, 11, 1307.

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8. Haiping Su, Alejandro A Barragan, **Linxiao Geng**, Donghui Long, Licheng Ling, Krassimir N Bozhilov, Lorenzo Mangolini, Juchen Guo, "Colloidal Synthesis of Silicon@Carbon Composite Materials for Lithium-Ion Batteries" *Angew. Chem. Int. Ed.* 2017, 129, 1-7.
9. Haiping Wu, Yue Cao, **Linxiao Geng**, Chao Wang, "In Situ Formation of Stable Interfacial Coating for High Performance Lithium Metal Anodes" *Chem. Mater.* 2017, 29(8), 3572-3579.
10. Scott G. McArthur, Rahul Jay, **Linxiao Geng**, Juchen Guo, Vincent Lavallo, "Below the 12-Vertex: 10-Vertex Carborane Anions as Non-Corrosive, Halide Free, Electrolytes for Rechargeable Mg Batteries." *Chem. Commun.* 2017, 53, 4453-4456
11. Juchen Guo, **Linxiao Geng**, "Battery with Molybdenum Sulfide Electrode and Methods" *US Patent App.* 15/469, 159.
12. Vincent Lavallo, Juchen Guo, **Linxiao Geng**, Sarah Lee, Jess Estrada, Scott G. McArthur, "Novel high voltage 10, 11, and 12-vertex carborane and borane electrolytes, their use in rechargeable batteries, and processes for their preparation" *US Patent App.* 15/887,850

PROFESSIONAL SERVICES

Review editor for *Frontiers in Energy Research*;

Journal reviewer for: *Nature Communications*, *ACS Applied Materials & Interfaces*, *Electrochimica Acta*, *Solid State Ionics*, *Chemical Engineering Journal*, *Batteries*, *Materials*, *Energies*.

PRESENTATIONS

Juchen Guo, **Linxiao Geng**, Guocheng Lv, Xuebing Xing, "A Prototype Rechargeable Aluminum battery" 2015, 228th ECS national meeting, Phoenix

Linxiao Geng, Juchen Guo, "A Prototype Rechargeable Aluminum Battery" 2015 AIChE Annual Meeting, Salt Lake City

Linxiao Geng, Juchen Guo, "Titanium Sulfides as Cathode Materials for Rechargeable Aluminum Ion Battery" 2017 MRS Spring Meeting & Exhibit, Phoenix

Linxiao Geng, Juchen Guo, "Transition Metal Sulfides as Cathode Materials for Rechargeable Aluminum Ion Battery" 2017 231st ECS national meeting, New Orleans

AWARDS AND HONORS

Earle C. Anthony Graduate Student Travel Awards, UCR	June 2017
Dissertation Year Program Award, UCR	2017 - 2018
Dean's Distinguished Fellowship, UCR	2013 - 2014
Outstanding Graduate, Nankai University	June 2012
National Endeavor Scholarship of China	October 2010