

Ruocun (John) Wang

3900 Chestnut Street, APT 833
Philadelphia, PA 19104

(765)404-2081
jw3759@drexel.edu

EDUCATION

North Carolina State University, Raleigh, NC, US	07/2020
Ph.D. in Materials Science & Engineering	
Advisor: Prof. Veronica Augustyn	
Dissertation title: “ <i>Improvement of Electrochemical Ion Insertion Kinetics in Tungsten Oxides with Structural Water and Trace Water in a Non-Aqueous Electrolyte</i> ”	
Purdue University, West Lafayette, IN, US	05/2015
B.S. with distinction in Materials Science & Engineering	
Minor in Global Engineering Studies	
Senior Design Project with Alcoa Lafayette Operations: “ <i>Optimization of Commercial Aluminum Alloy Melting in Reverberatory Furnaces</i> ”	
Study Abroad, Imperial College London, London, UK	Spring 2014

PROFESSIONAL EXPERIENCE

Postdoctoral Fellow , North Carolina State University, Advisor: Veronica Augustyn	08/2020 – 12/2020
Graduate Research Assistant , North Carolina State University, Advisor: Veronica Augustyn	08/2015 – 07/2020
Undergraduate Research Assistant , Purdue University, Advisor: John A. Howarter	06/2012 – 05/2015

PEER-REVIEWED PUBLICATIONS

1. W. Tsai, **R. Wang**, S. Boyd, V. Augustyn, N. Balke, “Probing local electrochemistry via mechanical cyclic voltammetry curves.” *Nano Energy*, **81** (2021) 105592.
2. **R. Wang**, Y. Sun, A. Brady, S. Fleischmann, S. Boyd, M. Spencer, H.-W. Wang, D.-E. Jiang, V. Augustyn, “Fast Proton Insertion in Layered H₂W₂O₇ via Selective Etching of an Aurivillius Phase.” *Advanced Energy Materials*, (2020) 2003335.
3. V. Augustyn, **R. Wang**, M. Pharr, N. Balke, C. Arnold, “Deformation during Electrosorption and Insertion-Type Charge Storage: Origins, Characterization, and Design of Materials for High Power.” *ACS Energy Letters*, **5** (2020) 3548–3559.
4. **R. Wang**, S. Boyd, P.V. Bonnesen, V. Augustyn, “Effect of Water in a Non-Aqueous Electrolyte on Electrochemical Mg²⁺ Insertion into WO₃.” *Journal of Power Sources*, **477** (2020) 229015. (*Special Issue in Celebration of 2019 Nobel Prize in Chemistry*).
5. S. Fleischmann, J. Mitchell, **R. Wang**, D.-E. Jiang, V. Presser, V. Augustyn, “Pseudocapacitance: From Fundamental Understanding to High Power Energy Storage Materials.” *Chemical Reviews*, **120** (2020) 6738–6782.
6. S. Fleischmann, Y. Sun, N.C. Osti, **R. Wang**, E. Mamontov, D.-E. Jiang, V. Augustyn, “Interlayer separation in hydrogen titanates enables electrochemical proton intercalation.” *Journal of Materials Chemistry A*, **8** (2020) 412–421.
7. **R. Wang**, J.B. Mitchell, G. Qiang, W.Y. Tsai, S.K. Boyd, M. Pharr, N. Balke, V. Augustyn, “Operando AFM Reveals Mechanics of Structural Water Driven Battery-to-Pseudocapacitor Transition.” *ACS Nano*, **12** (2018) 6032–6039.
8. **R. Wang**, C.C. Chung, Y. Liu, J.L. Jones, V. Augustyn, “Electrochemical Intercalation of Mg²⁺ into Anhydrous and Hydrated Crystalline Tungsten Oxides.” *Langmuir*, **33** (2017) 9314–9323.

9. J.S. Daubert, **R. Wang**, J.S. Ovental, H.F. Barton, R. Rajagopalan, V. Augustyn, G.N. Parsons, "Intrinsic Limitation of Atomic Layer Deposition for Pseudocapacitive Metal Oxides in Porous Electrochemical Capacitor Electrodes." *Journal of Materials Chemistry A*, **5** (2017) 13086–13097.
10. K. Gao, L.T. Kearney, **R. Wang**, J.A. Howarter, "Enhanced Wettability and Transport Control of Ultrafiltration and Reverse Osmosis Membranes with Grafted Polyelectrolytes." *ACS Applied Materials and Interfaces*, **7** (2015) 24839–24847.

AWARDS & HONORS

(postponed due to COVID-19 pandemic) Participant , SSMCDAT2020 Hackathon, Institute for Data, Intelligent, Systems, and Computation	2020
Student Poster 1st Prize , 2019 Carolina Science Symposium	2019
Overall Grand Prize , 2019 Triangle Student Research Competition	2019
ECS Battery Division Student Slam 3 Best Paper Award , 235 th ECS Meeting	2019
ECS Data Science Hack Week Travel Support , the Army Research Office	2019
The Bob and Suester Sowell Travel Fellowship , NC State Grad School	2019
2nd place at 2019 Graduate Student Research Symposium in Engineering , NC State Grad School	2019
American Society of Microscopy Travel Award , American Society of Microscopy	2017
Participant , 2017 Next Generation Electrochemistry Research Institute, University of Illinois at Chicago	2017
2nd Place at MRS 2016 Spring Meeting "Sustainability in My Community" Competition , Materials Research Society	2016
NCSU CoE Professional Development Travel Award , NCSU College of Engineering	2016
John L. Bray Memorial Award , Purdue School of Materials Engineering	2015
Matthew Slone Academic Excellence Scholarship , Purdue School of Materials Engineering	2014
Industrial Roundtable Scholarship , Purdue Engineering Student Council	2014
2014 Expo Scholarship , Purdue Engineering Student Council	2014
GEARE Living Allowance , Purdue Office of Professional Practice	2013
Study Abroad Scholarship , Purdue Study Abroad Office	2013
MSE General Scholarship , Purdue School of Materials Engineering	2013
ASM Muncie Chapter Scholarship , American Society for Metals Muncie Chapter	2013
Alcoa Foundation Scholarship , Purdue School of Materials Engineering	2012
One Brick Higher Award , Purdue University	2012

ORAL PRESENTATIONS

1. Energy Storage and Membrane Materials Group Seminar, Oak Ridge National Lab, September 2020.
2. 235th ECS Meeting, Dallas, TX, May 2019. (2)
3. Pittcon 2019, Philadelphia, PA, March 2019.
4. 2018 International Conference of African Materials Research Society, Gaborone, Botswana, December 2017. (2)
5. 2017 Materials Research Society Spring Meeting, Phoenix, AZ, April 2017.

SELECTED POSTER PRESENTATIONS

1. 2019 Carolina Science Symposium, Raleigh, NC, November 2019.
2. 2019 Triangle Student Research Competition, Raleigh, NC, October 2019.
3. 2019 FIRST EFRC All-hands Meeting, Oak Ridge, TN, September 2019.
4. O-HyLi Symposium, Chicago, IL, September 2019.
5. 2019 FIRST EFRC A-Team On-site Meeting, Raleigh, NC, July 2019.
6. 2019 Graduate Student Research Symposium, Raleigh, NC, March 2019.
7. 2018 Carolina Science Symposium, Raleigh, NC, November 2018.

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8. 5th Annual Triangle Student Research Competition, Research Triangle Park, NC, September 2018.
 9. 2018 State Energy Conference, Raleigh, NC, April 2018.
 10. 2018 Batteries Gordon Research Conference, Ventura, CA, March 2018.
 11. 232nd ECS Meeting, National Harbor, MD, October 2017.
 12. WE-Heraeus-Seminar: *In-operando* characterization of energy materials, Bad Honnef, Germany, August 2017.
 13. 2017 Joint Nanoscience and Neutron Scattering User Meeting at Oak Ridge National Laboratory, Oak Ridge, TN, August 2017.
 14. 2016 North Carolina MRS/ASM/AVS Conference, Raleigh, NC, October 2016.
 15. 3rd Annual Triangle Student Research Competition, Research Triangle Park, NC, September 2016.
 16. Center for Dielectrics and Piezoelectrics Spring 2016 meeting, Kyoto, Japan, June 2016.
 17. MRS Spring 2016 Meeting “Sustainability in My Community” competition, Phoenix, AZ, March 2016.

TEACHING & MENTORING

Echem Channel, YouTube

- Video content contributor on energy storage electrochemistry and literature review (09/2020 – *present*)

Department of Materials Science & Engineering, NC State University

- Undergraduate Research: Hannah Teeters, Mentor (Fall 2020)
- MSE 423 Introduction to Materials Engineering Design, Co-mentor (undergraduate: Fall 2019 – Fall 2020)
- MSE 200 Mechanical Properties of Structural Materials, Teaching Assistant (undergraduate: Fall 2015)

SERVICE

SciBridge, NC State University

- Co-founded the student chapter and served as vice-president (2016 – 2018) and a team leader of the thermoelectric generator project (2016 – 2020)
- Delivered experimental kits of thermoelectric generators, which included a lesson plan and materials needed to complete the experiments, to six universities in Uganda.

Fluid Interface Reactions, Structures and Transport (FIRST) Energy Frontier Research Center (EFRC), Department of Energy (DOE)

- Served as A-Team leader (2018 – 2019), where I organized the 2019 FIRST EFRC A-Team On-site Meeting in Raleigh and regular online research discussion meetings among the graduate students and postdocs in the center.
- Served as the center’s representative at DOE Basic Energy Science - Early Career Network, where I contributed to the organization of “Elevator Pitch and Science Speed Dating Lunch” at the 2019 EFRC PI Meeting and “2019 Sept Reps Meeting on Careers”.

Peer reviewer: Journal of the American Ceramic Society, Small, Advanced Energy Materials.

PROFESSIONAL AFFILIATIONS

the Electrochemical Society, Materials Research Society