Ruocun (John) Wang

Assistant Professor
Dept. of Materials Science & Engineering
University of North Texas, Denton, TX, USA
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EDUCATION

North Carolina State University, Raleigh, NC, U.S. 07/2020
Ph.D. in Materials Science & Engineering
Advisor: Prof. Veronica Augustyn

Purdue University, West Lafayette, IN, U.S. 05/2015
B.S. with distinction in Materials Science & Engineering
Minor in Global Engineering Studies

Study Abroad, Imperial College London, London, UK Spring 2014

PROFESSIONAL EXPERIENCE

Assistant Professor, *University of North Texas* 08/2024 – *present*
Research Associate I, *Drexel University, Advisor: Yury Gogotsi* 07/2023 – 08/2024
Postdoctoral Fellow, *Drexel University, Advisor: Yury Gogotsi* 01/2021 – 07/2023
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

AWARDS & HONORS

Junior Faculty Summer Research Grant, University of North Texas 2025
AMRS Travel Support, African Materials Research Society 2024
ECS Colin Garfield Fink Summer Fellowship, the Electrochemical Society ($5,000, one award annually) 2023
2023 Cotswold Foundation Postdoctoral Fellowship ($50,000), The Cotswold Foundation 2022
Participant, 2021 Telluride School on Interfacial Chemistry and Charge Transfer for Energy Storage and Conversion 2021
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, 235th 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 the 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 "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
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

PUBLICATIONS (* = co-first-author, # = corresponding author)

1. A. de Kogel, **R. Wang,#** W.-Y. Tsai,# M. Tobis, R. Leiter, R. Luo, E. W. Zhao,# S. Fleischmann,# X. Wang# "Material characterization methods for investigating charge storage processes in 2D and layered materials-based batteries and supercapacitors" *Nanoscale,* **17** (2025) 13531.

Prior to UNT:

2. P. Devi, M. Downes, S. Pahra, S. Ippolito, **R. Wang,** Y. Gogotsi, "Unveiling the Electrocatalytic Performance of M5X4 MXenes for Hydrogen Evolution Reaction" *Small*, e03947 (2025).
3. M. Anayee, **R. Wang,** M. Downes, S. Ippolito, Y. Gogotsi, "Layer-by-layer mechanism of the MAX phase to MXene transformation" *Matter*, **8** (2025) 102092.
4. A. Perju, D. Zhang, **R. Wang,** P.-L. Taberna, Y. Gogotsi, P. Simon "*Operando* Tracking of Resistance, Thickness, and Mass of $Ti_3C_2T_x$ MXene in Water-in-Salt Electrolyte" *Advanced Energy Materials* (2025) 2405028.
5. L. Zhao, L. Bi, J. Hu, G. Gao, D. Zhang, Y. Li, A. Flynn, T. Zhang, **R. Wang,** X.M. Cheng, L. Liu, Y. Gogotsi, & B. Li "Universal salt-assisted assembly of MXene from suspension on polymer substrates" *Nature Communications,* **15** (2024) 10027.
6. M. Downes, C.E. Shuck, **R. Wang,** P.P. Michałowski, J. Shochat, D. Zhang, M. Shekhirev, Y. Yang, N.J. Zaluzec, R. Arenal, & S.J. May, Y. Gogotsi "Synthesis of Three Isoelemental MXenes and Their Structure − Property Relationships" *Journal of American Chemical Society,* **146** (2024) 31159–31168.
7. L. Bi, R. Garg, N. Noriega, **R. Wang,** H. Kim, K. Vorotilo, J.C. Burrell, C.E. Shuck, F. Vitale, B.A. Patel, Y. Gogotsi "Soft, Multifunctional MXene-Coated Fiber Microelectrodes for Biointerfacing" *ACS Nano,* **18** (2024) 23217–23231.
8. I. Hussain, F. Rehman, M. Saraf, T. Zhang, **R. Wang,** T. Das, Z. Luo, Y. Gogotsi, K. Zhang "Electrochemical Properties of $Mo_4VC_4T_x$ MXene in Aqueous Electrolytes" *ACS Applied Materials & Interfaces,* **16** (2024) 38053–38060.
9. G. Valurouthu, M. Shekhirev, M. Anayee, **R. Wang,** K. Matthews, T. Parker, R. W. Lord, D. Zhang, A. Inman, M. Downes, C.W. Ahn, V. Kalra, I.-K. Oh, Y. Gogotsi, "Screening Conductive MXenes for Lithium Polysulfide Adsorption" *Advanced Functional Materials*, 2404430 (2024).
10. M. Anayee, M. Shekhirev, **R. Wang**, Y. Gogotsi, "Effect of Oxygen Substitution and Oxycarbide Formation on Oxidation of Ti_3AlC_2 MAX Phase" *Journal American Ceramic Society,* **107** (2024) 6334–6341.
11. Y. Yang, M. Anayee, A. Pattammattel, M. Shekhirev, **R. Wang,** X. Huang, Y. Chu, Y. Gogotsi, S. May "Enhanced magnetic susceptibility in $Ti_3C_2T_x$ MXene with Co and Ni incorporation" *Nanoscale,* **16** (2024) 5760–5767.
12. T. Zhang, K. Shevchuk, **R. Wang,** H. Kim, J. AlHourani, Y. Gogotsi "Delamination of chlorine-terminated MXene produced using molten salt etching" *Chemistry of Materials* **36** (2024) 1998–2006.
13. M. Chagnot, S. Abello, **R. Wang,** J. Dawlaty, J. Rodríguez-López, C. Zhang, V. Augustyn, "Understanding the Kinetics of Cation Insertion-Coupled Electron Transfer in Thin Film Electrodes from Cyclic Voltammetry" *Journal of the Electrochemical Society,* **171** (2024) 010527.
14. D. Zhang*, **R. Wang*,** X. Wang, Y. Gogotsi, "*In situ* monitoring redox processes in energy storage using UV-Vis spectroscopy" ***Nature Energy,*** **8** (2023) 567–576.
15. L. Bi, W. Perry, **R. Wang,** R. Lord, T. Hryhorchuk, A. Inman, O. Gogotsi, V. Balitskiy, V. Zahorodna, S. Vorotilo, G. Dion, Y. Gogotsi, "MXene Functionalized Kevlar Yarn via Automated, Continuous Dip Coating" *Advanced Functional Materials* (2023) 2312434.
16. **R. Wang,** "2023 Colin Garfield Fink Postdoctoral Summer Fellowship–Summary Report: The Effect of Electrochemical Hydrogen Production and Storage in $Ti_3C_2T_x$ MXene on Cell Pressure" *The Electrochemical Society Interface*, **32** (2023) 34–35.
17. **R. Wang,** Driving the Research Ecosystem, in "Voices: Nanomaterials in the future of energy research" *Cell Reports Physical Science*, **4** (2023) 101605 (invited).

18. M. Saraf, B. Chacon, S. Ippolito, R.W. Lord, M. Anayee, **R. Wang,** A. Inman, C.E. Shuck, Y. Gogotsi, "Enhancing Charge Storage of $Mo_2Ti_2C_3$ MXene by Partial Oxidation" *Advanced Functional Materials,* **34** (2023) 2306815.

19. M. Downes, C.E. Shuck, R. Lord, M. Anayee, M. Shekhirev, **R. Wang,** T. Hryhorchuk, M. Dahlqvist, J. Rosen, Y. Gogotsi, "M_5X_4-A Family of MXenes" *ACS Nano,* **17** (2023) 17158–17168.

20. M. H. M. Facure, K. Matthews, **R. Wang,** R. W. Lord, D. S. Correa, Y. Gogotsi, "Pillaring Effect of Nanodiamonds and Expanded Voltage Window of $Ti_3C_2T_x$ Supercapacitors in $AlCl_3$ Electrolyte" *Energy Storage Materials,* **61** (2023) 102919.

21. S. Vorotilo, C. E. Shuck, M. Anayee, M. Shekhirev, K. Matthews, R. W. Lord, **R. Wang,** I. Roslyk, V. Balitskiy, V. Zahorodna, O. Gogotsi, Y. Gogotsi, "Affordable Combustion Synthesis of V_2AlC Precursor for V_2CT_x MXene" *Graphene and 2D Materials*, **8** (2023) 93–105.

22. M. Han, D. Zhang, C.E. Shuck, B. McBride, T. Zhang, **R. Wang,** K. Shevchuk, Y. Gogotsi, "Electrochemically Modulated Interaction of MXenes with Microwaves" ***Nature Nanotechnology,*** **18** (2023) 373–379.

23. C.A. Inman, T. Hryhorchuk, L. Bi, **R. Wang,** B. Greenspan, T. Tabb, E.M. Gallo, A. VahidMohammadi, G. Dion, A. Danielsecu, Y. Gogotsi, "Wearable energy storage with MXene textile supercapacitors for real world use" *Journal of Materials Chemistry A,* **11** (2023) 3514–3523.

24. M. Anayee, C. Shuck, M. Shekhirev, A. Goad, **R. Wang,** Y. Gogotsi, "Kinetics of Ti_3AlC_2 etching for $Ti_3C_2T_x$ MXene Synthesis" *Chemistry of Materials*, **34** (2022) 9589–9600.

25. J. Mitchell, **R. Wang**, J. Ko, J.W. Long, V. Augustyn, "Critical Role of Structural Water for Enhanced Li^+ Insertion Kinetics in Crystalline Tungsten Oxides" *Journal of The Electrochemical Society*, **169** (2022) 030534.

26. S. Saeed, S. Boyd, W.Y. Tsai, **R. Wang**, N. Balke, V. Augustyn, "Understanding electrochemical cation insertion into Prussian Blue from electrode deformation and mass changes." *Chemical Communications***, 57** (2021) 6744–6747.

27. W.Y. Tsai, **R. Wang**, S. Boyd, V. Augustyn, N. Balke, "Probing local electrochemistry via mechanical cyclic voltammetry curves" *Nano Energy,* **81** (2021) 105592.

28. 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 $H_2W_2O_7$ via Selective Etching of an Aurivillius Phase" *Advanced Energy Materials***, 11** (2020) 2003335.

29. 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. *(Front Cover of the Issue)*

30. R. Wang, S. Boyd, P.V. Bonnesen, V. Augustyn, "Effect of Water in a Non-Aqueous Electrolyte on Electrochemical Mg^{2+} Insertion into WO_3" *Journal of Power Sources*, **477** (2020) 229015. *(Special Issue in Celebration of 2019 Nobel Prize in Chemistry)*

31. 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.

32. 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.

33. 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.

34. R. Wang, C.C. Chung, Y. Liu, J.L. Jones, V. Augustyn, "Electrochemical Intercalation of Mg^{2+} into Anhydrous and Hydrated Crystalline Tungsten Oxides" *Langmuir,* **33** (2017) 9314–9323.

35. 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.

36. 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 & Interfaces,* **7** (2015) 24839–24847.

INVITED SEMINARS

1. **Chonnam National University**, School of Materials Science and Engineering, Virtual, June 2025.
2. **Texas Tech University**, Dept. of Chemical Engineering, Lubbock, TX, April 2024.
3. **University of North Texas**, Dept. of Materials Science and Engineering, Denton, TX, February 2024.
4. **Drexel University**, Nanomaterials Group, Virtual, September 2020.
5. **Oak Ridge National Lab**, Energy Storage and Membrane Materials Group, Virtual, September 2020.

INVITED CONFERENCE PRESENTATIONS

1. **247th ECS Meeting (Invited)**, Montreal, Canada, May 2025.
2. **2025 TMS Meeting (Invited)**, Las Vegas, NV, April 2025.
3. **245th ECS Meeting (Invited),** San Francisco, CA, April 2024.

CONTRIBUTED CONFERENCE PRESENTATIONS

4. **2024 International Conference of the African MRS**, Kigali, Rwanda, December 2024.
5. **2024 CNMS User Meeting**, Knoxville, TN, August 2024.
6. **The 3rd International MXene Conference**, Philadelphia, PA, August 2024.
7. **2024 Materials Research Society Spring Meeting**, Seattle, WA, April 2024.
8. **2024 TMS Annual Meeting,** Orlando, FL, March 2024.
9. **2023 Materials Research Society Fall Meeting**, Boston, MA, November 2023.
10. **2023 Materials Research Society Spring Meeting**, San Francisco, CA, April 2023.
11. **235th ECS Meeting**, Dallas, TX, May 2019. (2 talks)
12. **Pittcon 2019**, Philadelphia, PA, March 2019.
13. **2018 International Conference of the African MRS**, Gaborone, Botswana, December 2017. (2 talks)
14. **2017 Materials Research Society Spring Meeting**, Phoenix, AZ, April 2017.

TEACHING

Department of Materials Science and Engineering, University of North Texas

- MTSE 3030 Thermodynamics and Phase Diagram: Instructor (undergraduate, Fall 2025)
- MTSE 5800-041 Materials Electrochemistry for Energy Storage and Conversion: Instructor (graduate: Spring 2025)
- MTSE 3030 Thermodynamics and Phase Diagram: Guest Lecturer (undergraduate, Fall 2024)
- MTSE 5480 Energy Materials: Guest Lecturer (graduate, Fall 2024)

A.J. Drexel Nanomaterials Institute & Department of Materials Science and Engineering, Drexel University

- MATE 582 Materials for Energy Storage: Guest Lecturer (graduate: Fall 2022 & Fall 2023)
- MATE 100 Materials for Emerging Technologies: Guest Lecturer (undergraduate: Summer 2022)
- MATE 280 Advanced Materials Laboratory: Coordinator & Guest Lecturer (undergraduate: Fall 2021, Fall 2022, Fall 2023)
- ENGR 220 Fundamentals of Materials: Teaching Assistant (undergraduate, Summer 2022)
- MXene Course: Coordinator & Lecturer (worldwide, biannual, Fall 2021 – Summer 2023)

Department of Chemistry, City University of New York-Herbert H. Lehman College

- CHE 34501 Physical Chemistry Laboratory in Quantum Chemistry: Guest Lecturer (graduate: Fall 2023)

Department of Materials Science & Engineering, NC State University

- MSE 200 Mechanical Properties of Structural Materials: Teaching Assistant (undergraduate, Fall 2015)
- MSE 423 Introduction to Materials Engineering Design: Co-mentor (undergraduate, Fall 2019 & Fall 2020)

EChem Channel, YouTube (09/2020 – *present*)

- Content Creator: Made 22× videos on literature, theory, and experimental practices on energy storage and electrochemistry. The channel has attracted > 8,200 subscribers and collected > 470,000 views.

ADVISING

Department of Materials Science and Engineering, University of North Texas

Name	Position	Years	Next Position
Như Quỳnh Nguyễn	Ph.D. student	8/2025 – present	
Lei Li	Ph.D. student	8/2025 – present	
Jeevan Ghimire	M.S. student	8/2025 – present	
Aydan Tseng	undergraduate student	9/2024 – present	
Jack Bristol	undergraduate student	8/2024 – present	

SERVICE & LEADERSHIP

Symposium Organizer

- 2025 Gordon Research Seminar (GRS) on Nanomaterials for Applications in Energy Technology, Ventura, CA. March 2025

Session Chair

- Symposium on "Nanocarbons and 2D Materials for Energy Storage Applications," 247th ECS Meeting, Montreal, Canada. May 2025.
- Symposium on "Synthesis and Characterization III," 2024 Materials Research Society (MRS) Spring Meeting, Seattle, WA. April 2024.
- Symposium on "Synthesis, Properties and Applications of 2D MXenes," 2023 MRS Fall Meeting, Boston, MA. November 2023.

Proposal Reviewer:

- Israel Science Foundation (2025)
- Oak Ridge National Lab (ORNL) Center for Nanophase Materials Sciences (CNMS) (2024, 2025)

Peer reviewer for 30+ journals: *Advanced Materials, Nature Communications, Materials Today, Advanced Energy Materials, ACS Nano, ACS Energy Letters, Advanced Functional Materials, Journal of Materials Chemistry A, Journal of Physical Chemistry Letters, Journal of the Electrochemical Society, Small, Small Methods, Small Structures, Chemical Engineering Journal, Advanced Materials Interfaces, Batteries & Supercaps, Electrochimica Acta, Electrochemistry Communications, Energy Storage Materials, Journal of the American Ceramic Society, Journal of Physical Chemistry C, ChemElectroChem, Materials Today Energy, Materials Advances, Energy Advances, MRS Energy & Sustainability, Applied Physics A, ACS Applied Materials & Interfaces, ACS Applied Nano Materials, ACS Applied Engineering Materials, ACS Omega, Materials Chemistry and Physics, Inorganic Chemistry, Communications Materials, New Journal of Chemistry*.

University of North Texas

- Outreach and Recruitment Committee: develop content for LinkedIn and other professional virtual outlets and the departmental Newsletter. Participate in local outreach activities.
- Judge: abstract review, oral, poster, and three-minute

Oak Ridge National Lab (ORNL) Center for Nanophase Materials Sciences (CNMS)

- User Executive Committee (UEC) At-Large Member: Elected by the CNMS User Group in 2023. Responsibilities include bridging the user community and the CNMS management and staff and organizing the annual user meeting. (2024 – 2025)

Women Supporting Women in the Sciences (WS2)

- Consultant: Supported experimental kit designed for K-12 students in East Africa. (2021)

Drexel University

- Judge: abstract review, oral, poster, and three-minute thesis presentations at Drexel Emerging Graduate Scholars (DEGS) Conferences and STAR Scholars Quick Pitch Competition. (2021 – 2024)
- Reviewer: Reviewed two applications for the Anonymous Campus Review for Drexel applicants to the NSF's Graduate Research Fellowship Program (GRFP). (2021)

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

- A-Team leader: 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. (2018 – 2019)
- Representative at DOE Basic Energy Science - Early Career Network: co-organized "Elevator Pitch and Science Speed Dating Lunch" at the 2019 EFRC PI Meeting and "2019 Sept Reps Meeting on Careers". (2019)

SciBridge, NC State University

- Student chapter co-founder, vice-president, and team leader: Delivered experimental kits of thermoelectric generators, which included materials needed to complete the experiments, to six universities in Uganda. (2016 – 2020)

PROFESSIONAL AFFILIATIONS

International Society of Electrochemistry, the Electrochemical Society, Materials Research Society, American Chemical Society