

Curriculum Vitae: Zizwe A. Chase, Ph.D.

Assistant Professor
Department of Electrical and Computer Engineering
University of Illinois at Chicago
Chicago, IL 60607
Chase8@uic.edu

Education

2010-2018: Ph.D. in Chemical Engineering, Washington State University

2003-2005: B.S. in Chemical Engineering, Georgia Institute of Technology

2000-2003: B.S. in Chemistry (magna cum laude), Morehouse College

Research/Academic/Professional Appointments

- 2023-Present: Assistant Professor, Electrical and Computer Engineering Department, University of Illinois at Chicago, Chicago, IL
- 2021-2023: Bridge-to-Faculty Scholar, Electrical and Computer Engineering Department, University of Illinois at Chicago, Chicago, IL
- Summer 2022: Intern, Center for Green Research on Energy and Environmental Materials, National Institute of Material Science, Tsukuba, Ibaraki, Japan
- 2018-2021: Postdoctoral Fellow, Howard University, Washington, D.C.
- 2012 – 2018: Ph.D. Intern, Pacific Northwest National Laboratory/Environmental Molecular Sciences Laboratory, Richland, WA
- 2011 – 2015: Research Assistant, Washington State University, Pullman, WA
- 2010 – 2011: Teaching Assistant, Washington State University, Pullman, WA
- 2005 – 2009: Process Engineer, Milliken and Company, Lagrange, GA
- Summer 2003: Intern, Astrochemistry Branch, NASA Goddard Space Flight Center, College Park, MD
- Summer 2002: Intern, Geodynamics Branch, NASA Goddard Space Flight Center, College Park, MD
- Summer 2001: Intern, Earth Sciences Division, NASA Goddard Space Flight Center, College Park, MD

Peer-Reviewed Publications (17)

1. Blackwell, A.; Yahiaoui, R.; Chen, Y.-H.; Mathews, J.; Chen, P.-Y.; Searles, T.A.; **Chase, Z.A.**, "Terahertz Graded Index Lens for Miniaturized Implementation of the Deutsch Josza Algorithm", *Opt. Express*, 2023, DOI: 10.1364/OE.495919
2. Yahiaoui, R.; **Chase, Z.A.**; Kyaw, C.; Tay, F.; Baydin, A.; Noe II, G.T.; Song, J.; Kono, J.; Agrawal, A.; Bamba, M.; Searles, T.A., "Enhancing Dicke Cooperativity in Terahertz Metasurfaces Through Ultrastrong Coupling" *Nano Lett.*, 2022, DOI: 10.1021/acs.nanolett.2c01892
3. Yahiaoui, R.; **Chase, Z.A.**; Kyaw, C.; Seabron, E.; Mathews, J.; Searles, T.A., "Dynamically tunable single-layer VO₂/metasurface based THz cross-polarization converter" *J. Phys. D Appl. Phys.*, 2021, DOI: 10.1088/1361-6463/abe9df
4. Wang, Z.; Walter, E.D.; Sassi, M.; Zhang, X.; Zhang, H.; Li, X.S.; Chen, Y.; Cui, W.; Tuladhar, A.; **Chase, Z.**; Winkelman, A.D.; Wang, H.; Pearce, C.I.; Clark, S.B.; Russo, K.M., "The role of surface hydroxyls on the radiolysis of gibbsite and boehmite nanoplatelets" *J. Hazard. Mater.*, 2020, DOI: 10.1016/j.jhazmat.2020.122853
5. Kyaw, C.; Yahiaoui, R.; **Chase, Z.A.**; Tran, V.; Baydin, A.; Tay, F.Y.; Kono, J.; Manukumara, M.; Singh, R.; Abeyasinghe, D.C.; Urbas, A.M.; Searles, T.A., "Guided Mode Resonances in Flexible 2D THz Photonic Crystals" *Optica*, 2020, DOI: 10.1364/OPTICA.388761
6. Link, K.A.; Spurzem, G.N.; Tuladhar, A.; **Chase, Z.**; Wang, Z.; Wang, H.; Walker, R.A., "Cooperative Adsorption of Trehalose to DPPC Monolayers at the Water–Air Interface Studied with Vibrational Sum Frequency Generation" *J. Phys. Chem. B.*, 2019, DOI: 10.1021/acs.jpcc.9b07770
7. Link, K.A.; Spurzem, G.N.; Tuladhar, A.; **Chase, Z.**; Wang, Z.; Wang, H.; Walker, R.A., "Organic Enrichment at Aqueous Interfaces: Cooperative Adsorption of Glucuronic Acid to DPPC Monolayers Studied with Vibrational Sum Frequency Generation" *J. Phys. Chem. A.*, 2019, DOI: 10.1021/acs.jpca.9b02255
8. Upshur, M.A.; Vega, M.M.; Bé, A.G.; Chase, H.M.; Zhang, Y.; Tuladhar, A.; **Chase, Z.A.**; Li, F.; Ebben, C.J.; Wang, Z.; Martin, S.T.; Geiger, F.M.; Thomson, R.J., "Synthesis and surface spectroscopy of α -pinene isotopologues and their corresponding secondary organic material" *Chem. Sci.*, 2019, DOI: 10.1039/C9SC02399B
9. Tuladhar, A.; **Chase, Z.A.**; Baer, M.; Legg, B.; Zhang, S.; Tao, J.; Wang, Z.; Winkelman, A.; Wang, Z.; Mundy, C.; Wang, H.-F.; Yoreo, J.D., "Direct Observation of the Orientational Anisotropy of Buried Hydroxyl Groups Inside Muscovite Mica" *J. Soc. Am. Chem.*, 2019, DOI: 10.1021/jacs.8b12483
10. Burrow, J.A.; Yahiaoui, R.; Sims, W.; **Chase, Z.A.**; Tran, V.; Sarangan, A.; Mathews, J.; Rockward W.S.; Agha, I.; Searles, T.A., "Influence of Symmetry Breaking on Fano-like Resonances in High Figure of Merit Planar THz Metafilms" *arXiv Preprints*, 2018, Web
11. Be, A.; Chase, H.; Liu, Y.; Upshur, M.A.; Zhang, Yue; Tuladhar, A.; **Chase, Z.A.**; Bellcross, A.D.; Wang, Z.; Wang, H.-F.; Batista, V.; Martin, S.; Thomson, R.J.; Geiger, F., "Atmospheric β -Caryophyllene-Derived Ozonolysis Products at Interfaces" *ACS Earth Space Chem*, 2018, DOI: 10.1021/acsearthspacechem.8b00156
12. Link, K.A.; Hsieh, C.-Y.; Tuladhar, A.; **Chase, Z. A.**; Wang, Z.; Wang, H.-F.; Walker R.A., "Vibrational Studies of Saccharide-Induced Lipid Film Reorganization at Aqueous/Air Interfaces" *ChemPhys*, 2018, DOI: 10.1016/j.chemphys.2018.02.011

13. Chen, S.-L.; Fu, L.; **Chase, Z. A.**; Gan, W.; Wang, H.-F., "Local Environment and Interactions of Liquid and Solid Interfaces Revealed by Spectral Line Shape of Surface Selective Nonlinear Vibrational Probe" *J. Phy.Chem.C*, 2016, DOI: 10.1021/acs.jpcc.6b10215
14. **Chase, Z. A.**; Kasakov, S.; Shi, H.; Vjunov, A.; Fulton, J. L.; Camaioni, D. M.; Balasubramanian, M.; Zhao, C.; Wang, Y.; Lercher, J. A., "State of Supported Nickel Nanoparticles during Catalysis in Aqueous Media", *CHEM-EUR J.*, 2015, DOI: 10.1002/chem.201502723
15. Kasakov, S.; Zhao, C.; Barath, E.; **Chase, Z. A.**; Fulton, J. L.; Camaioni, D. M.; Vjunov, A.; Shi, H.; Lercher, J. A., "Glucose- and Cellulose-Derived Ni/C-SO₃H Catalysts for Liquid Phase Phenol Hydrodeoxygenation", *CHEM-EUR J.*, 2015, DOI: 10.1002/chem.201405242
16. Foraita, S.; Fulton, J. L.; **Chase, Z. A.**; Vjunov, A.; Xu, P.; Baráth, E.; Camaioni, D. M.; Zhao, C.; Lercher, J. A., "Impact of the Oxygen Defects and the Hydrogen Concentration on the Surface of Tetragonal and Monoclinic ZrO₂ on the Reduction Rates of Stearic Acid on Ni/ZrO₂", *CHEM-EUR J.*, 2014, DOI: 10.1002/chem.201405312
17. **Chase, Z.A.**; Fulton, J. L.; Camaioni, D. M.; Mei, D.; Balasubramanian, M.; Pham, V.-T.; Zhao, C.; Weber, R. S.; Wang, Y.; Lercher, J. A., "State of Supported Pd during Catalysis in Water", *J. Phy.Chem.C*, 2013, DOI: 10.1021/jp404772p.

Refereed Abstracts, Conference Proceedings, Presentations, and Posters

- Oral Presentation, "Quantum Algorithm Emulator For Implementation Of Deutsch-Jozsa Algorithm In The THz Region", 48th IRMMW-THz Conference, September 18-22, 2023
- Oral Presentation, "Inverse-design Optimized Metamaterial for THz Application of Deutsch-Jozsa Algorithm", Tera Tech 2023, September 4-8, 2023
- Huang, Z.; Wu, W.; Herrmann, E.; Ma, K.; **Chase, Z.**; Searles, T.; Jungfleisch, B.; Wang, X., "Structural reconfigurable metamaterials driven by phase-transition materials", 44th Photonics & Electromagnetics Research Symposium (PIERS), 2023
- Oral Presentation, "Flexible Metastructure Graded-Index Lens as a Quantum Algorithm Emulator", Electronic Materials Conference, June 28-40, 2023
- Oral Presentation, "Terahertz Metadevice for Implementation of the Deutsch-Josza Algorithm", OPTICS & PHOTONICS International Congress 2023, April 17-21, 2023
- Oral Presentation, "Role of pyridine at the platinum-aqueous interface during the electrochemical reduction of CO₂", American Chemical Society Spring Meeting, March 26-30, 2023
- Oral Presentation, "Implementation of Quantum Algorithms for THz Metasurfaces", Workshop on Innovative Nanoscale Devices and Systems, December 4-9, 2022
- Digital Presentation, "In-Situ Investigation of Pyridine in CO₂ Electrochemistry", 242nd Electrochemical Society Meeting, October 9-13, 2022
- Yahiaoui, R.; **Chase, Z.A.**; Huang, Z.; Wang, X.; Searles, T.A., "Active Beam Steering of Terahertz Waves with Phase Change based Metasurfaces", *CLEO: Science and Innovations*, SWAG.4, 2022
- Oral Presentation, "Terahertz Beam Steering with Phase Change Based Metasurfaces", Conference on Lasers and Electro-Optics, May 15-20, 2022

- Oral Presentation, “Enhancing Dicke Cooperativity in Terahertz Metasurfaces Through Ultrastrong Coupling”, Material Research Society Spring Meeting, May 8-13, 2022
- Oral Presentation, “Terahertz Beam Steering with Phase Change Based Metasurfaces”, American Physics Society Spring Meeting, March 13-18, 2022
- Adel, T.; Amontree, J.; Yan, X.; **Chase, Z.**; Harton, R.; Stokes, C.; Searles, T.; Barmak, K.; Hone, J.; Hight-Walker, A., “Characterizing Strain in Graphene on Cu (100) Substrate with Raman Spectroscopy”, Bulletin of the American Physical Society, 2023
- Oral Presentation, “Dynamically Tunable Single-layer VO₂/metasurface-based broadband THz Cross-Polarization Converter”, Workshop on Innovative Nanoscale Devices and Systems, November 28- December 3, 2021
Oral Presentation, “Dynamically Tunable Single-layer VO₂/metasurface-based broadband THz Cross-Polarization Converter”, Joint Conference of the African Light Source, African Physical Society, and Pan African Conference on Crystallography, November 15-19, 2021
- Oral Presentation-**Invited Speaker**, “Dynamically Tunable Single-layer VO₂/metasurface-based broadband THz Cross-Polarization Converter”, National Society of Black Physicists Conference, November 4-7, 2021
- **Chase, Z.A.**; Yahiaoui, R.; Kyaw, C.; Seabron, E.; Mathews, J.; Searles, T.A., “Dynamically Tunable Single-layer VO₂/metasurface-based broadband THz Cross-Polarization Converter”, *Bulletin of the American Physical Society*, Fall 2020 APS Mid-Atlantic Section Meeting Abstracts, J04.00002, 2020
- Yahiaoui, R.; **Chase, Z.A.**; Kyaw, C.; Noe, G.T.; Baydin, A.; Tay, F.Y.; Strait, J.; Sun, J.; Kono, J.; Argawal, A.; Searles, T.A., "Capacitive-mediated strong coupling in terahertz plasmonic metafilms," *Conference on Lasers and Electro-Optics*, OSA Technical Digest (online), paper FTh4B.6, 2020
- Oral Presentation, “Dynamically Tunable Single-layer VO₂/metasurface-based broadband THz Cross-Polarization Converter”, American Physics Society- MidAtlantic Section, December 4-6, 2020
- Poster Presentation, “Dynamically Tunable Single-layer VO₂/metasurface-based broadband THz Cross-Polarization Converter for Planar Photonics Metadevices”, Photonic Online Meetup, June 21, 2020
- Kyaw, C.; Yahiaoui, R.; **Chase, Z.A.**; Singh, R.; Searles, T.A., “Manifestation of Plasmon-Induced Transparency in Photonic Crystal Slab Coupled to Terahertz Metasurface”, *Frontiers in Optics 2019 OSA Technical Digest* (online), paper LM3E.4, 2019
- Oral Presentation, “The Local Structure and Catalytic Performance of a NiFe Bimetallic Catalyst for Aqueous Phase Phenol Hydrogenation”, American Chemical Society-Northwest Regional Meeting, June 24-27, 2018, Richland, WA
- Poster Presentation, “The Local Structure and Catalytic Performance of a NiFe Bimetallic Catalyst for Aqueous Phase Phenol Hydrogenation”, North American Catalysis Society, June 4-9, 2017, Denver, CO
- Oral Presentation, “State of Supported Ni catalysts in Aqueous Media”, Pacific Coast Catalyst Society, September 17-18, 2015, Richland, WA
- Poster Presentation, “Cyclohexane Conformation at the Liquid/Solid Interface Probed by Sum Frequency Generation-Vibrational Spectroscopy (SFG-VS)”, Pacific Coast Catalyst Society, September 17-18, 2015, Richland, WA
- Poster Presentations, “State of Supported Ni catalysts in Aqueous Media”, Post-Graduate Research Symposium, July 17, 2015, Richland, WA
- Poster Presentations, “State of Supported Ni catalysts in Aqueous Media”, North American Catalysis Society, June 14-19, 2015, Pittsburgh, PA

- Oral Presentation, “Composition and Structure of Supported Palladium Catalysts during Hydrogenation of Phenol in Water”, William R. Wiley Research Exposition, January 30th, 2013, Pullman, WA
- Published abstract for Lunar and Planetary Science Conference (2003)

Publications in preparation (3)

1. Noguchi, H.; **Chase, Z.A.**, “The Role of Pyridine in the Electrochemical Reduction of CO₂”, (in preparation)
2. Tuladhar, A.; **Chase, Z.A.**; Baer, M.D.; Legg, B.A.; Adhikari, N.M.; Wang, Z.; Lee, S.S.; Mundy, C.J.; Wang, H.-F.; Yoreo, J.D. “Understanding the Mechanism of Proton Transfer at Mica-Aqueous Interface by Monitoring the H/D Exchange Reaction”, (in preparation)

Funding

1. Title: Reaching an Advanced Computing Technologies Workforce through Education Initiatives in Quantum Information Science and Engineering (ReACT-QISE)
Sponsor: Department of Energy
Role: Assistant Professor
Award Period: 07/01/23-06/30/26
Award Amount: \$1,836,000
2. Title: Three-birds with One Stone. High-frequency Instrumentation for Device Characterization and Future Radar and Communication System Measurements
Sponsor: Keysight Technologies
Role: Postdoctoral Associate
Award Period: 08/01/2022-07/21/2023
Award Amount: \$599,680

Teaching (3 year)

- **Instructor**, *University of Illinois at Chicago*,
Spring 2023
 1. ECE 594: Quantum Computing and Information: Level: Graduate (Text: Nielsen and Chuang), Team Taught: No, Credit Hours: 4, Course Type: Special Topics, Total Enrollment: 14
- **Instructor**, *University of Illinois at Chicago*,
Fall 2021, 2023
 1. ECE 540: Physics of Semiconductor Devices: Level: Graduate (Text: Sze & Lee), Team Taught: No, Credit Hours: 4, Course Type: Core, Total Enrollment: 5

Academic Service

Service to the profession

- Instructor, Benjamin Banneker Quantum Summer Institute, University of California at Santa Barbara (2023)
- Session Chair, Symposium: Adaptive Nanophotonics—Dynamic Metasurfaces/Metamaterials, Programmable Photonic Integrated Circuits and Neuromorphic Photonics, Material Research Society Spring Meeting, April 10-14, 2023
- Scientific content reviewer for peer-reviewed publication: *Nano Lett.*; *J Opt Soc Am B*

- Mentor for Global Quantum Leap International Research and National Nanotechnology Coordinated Infrastructure programs, National Institute of Material Science, Tsukuba, Ibaraki, Japan, Summer 2022
- Facilitator for MSI Quantum Workshop (2022)
- Judge for NOBCChE Virtual Conference (2021)

Service to University of Illinois at Chicago

- Mentor for Pulsed Magnet Station Project (2022-present)
- Judge at UIC Undergraduate Research Forum (2022)