Elizabeth R. Corson

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Education

2020 **Ph.D. in Chemical Engineering**
University of California, Berkeley, Berkeley, CA, GPA: 4.0 / 4.0
Advisor: Bryan D. McCloskey

2011 **B.S. in Chemical Engineering**
Illinois Institute of Technology, Chicago, IL, GPA: 3.96 / 4.0
Energy, Environment, and Economics Specialization

Academic Appointments

2021 - Present **TomKat Center Postdoctoral Fellow in Sustainable Energy**
Stanford University, Department of Chemical Engineering
Advisor: William A. Tarpeh

Research and Industry Experience

2015 - 2020 **Graduate Student Researcher**, McCloskey Lab
University of California, Berkeley, Berkeley, CA

2019 **Visiting Researcher**, Kortlever Lab
Technical University of Delft, Delft, The Netherlands

2012 - 2015 **Quality Manager, Quality Assurance Specialist**, Air Liquide
ALOHA Electronic Performance Materials, Fremont, CA

2011 - 2012 **Research Associate**, Air Liquide
Delaware Research and Technology Center, Newark, DE

Awards and Honors

2021 - 2023 TomKat Center Postdoctoral Fellowship in Sustainable Energy
2015 - 2020 National Science Foundation Graduate Research Fellowship
2021 NextProf Nexus 2021 Participant, University of Michigan
2021 Honorable Mention, SUNCAT Summer Institute Poster Competition
2020 AIChE Women in Chemical Engineering Travel Award
2020 Graduate Remote Instruction Innovation Fellows Program, UC Berkeley
2019 Rising Star in Chemical Engineering, Massachusetts Institute of Technology
2019 Next Generation Electrochemistry Fellow, University of Illinois at Chicago
2018 Berkeley Summer Institute for Preparing Future Faculty Fellow
2018 Third Place, Berkeley Energy & Resources Collaborative Poster Competition
2017 Outstanding Graduate Student Instructor Award, UC Berkeley
2016 Clinton Global Initiative University Invited Commitment Maker
2010 Stryker Distinguished Service Award
2010 Wilma Wilson Sharp Award
2007 - 2011 Camras Full Tuition Scholarship
2007 - 2011 Levenspiel Chemical Engineering Scholarship

Publications

Peer-Reviewed Publications

1. Liu, M. J., Guo, J., Hoffman, A. S., Stenlid, J. H., Tang, M. T., **Corson, E. R.**, Stone, K. H., Abild-Pedersen, F., Bare, S. R., Tarpeh, W. A. Catalytic Performance and Near-Surface X-ray Characterization of Titanium Hydride Electrodes for the Electrochemical Nitrate Reduction Reaction. *J. Am. Chem. Soc.*, 144 (13), 5739–5744, 2022.
2. **Corson, E. R.**, Creel, E. B., Kostecki, R., Urban, J. J., and McCloskey, B. D. Effect of Pressure and Temperature on Carbon Dioxide Reduction at a Plasmonically Active Silver Cathode. *Electrochim. Acta*, 374, 137820, 2021.
3. **Corson, E. R.**, Subramani, A., Cooper, J. K., Kostecki, R., Urban, J. J., and McCloskey, B. D. Reduction of Carbon Dioxide at a Plasmonically Active Copper–Silver Cathode. *Chem. Commun.*, 56, 9970–9973, 2020.
4. **Corson, E. R.**, Kas, R., Kostecki, R., Urban, J. J., Smith, W. A., McCloskey, B. D., and Kortlever, R. In Situ ATR–SEIRAS of Carbon Dioxide Reduction at a Plasmonic Silver Cathode. *J. Am. Chem. Soc.*, 142 (27), 11750–11762, 2020.
5. **Corson, E. R.***, Creel, E. B.*, Kostecki, R., McCloskey, B. D., and Urban, J. J. Important Considerations in Plasmon-Enhanced Electrochemical Conversion at Voltage Biased Electrodes. *iScience*, 23, 100911, 2020.
6. Creel, E. B., **Corson, E. R.**, Eichhorn, J., Kostecki, R., Urban, J. J., and McCloskey, B. D. Directing Selectivity of Electrochemical Carbon Dioxide Reduction Using Plasmonics. *ACS Energy Lett.*, 4, 1098–1105, 2019.
7. **Corson, E. R.**, Creel, E. B., Kim, Y., Urban, J. J., Kostecki, R., and McCloskey, B. D. A Temperature-Controlled Photoelectrochemical Cell for Quantitative Product Analysis. *Rev. Sci. Instrum.*, 89, 055112, 2018.
8. Kim, Y., Creel, E. B., **Corson, E. R.**, McCloskey, B. D., Urban, J. J., and Kostecki, R. Surface Plasmon-Assisted Photoelectrochemical Reduction of CO_2 and NO_3^- on Nanostructured Silver Electrodes. *Adv. Energy Mat.*, 1800363, 2018.
9. Hasse, D., Kulkarni, S., Sanders, E., **Corson, E. R.**, and Tranier, J. CO_2 Capture by Sub-Ambient Membrane Operation. *Energy Proced.*, 37, 993–1003, 2013.

**Denotes equal contribution*

In Preparation

1. Guo, J., Brimley, P., Liu, M. J., **Corson, E. R.**, Munoz, C., Smith, W. A., Tarpeh, W. A. Control and Characterization of the Interfacial Electrolyte Environment to Understand Mass Transport Effects on Electrochemical Nitrate Reduction. *Submitted.*

Peer Reviewer for Journals: *Chemical Communications, ACS Catalysis, Electrochimica Acta, Chem Catalysis, Accounts of Materials Research*

Grants

2021 - 2023 Structure of the Electric Double Layer during Nitrate Reduction
Stanford Synchrotron Radiation Lightsource Proposal No. S-XV-ST-5984

2019 - 2020 National Science Foundation Graduate Research Opportunities Worldwide
Grant No. DGE 1106400

2015 - 2021 Plasmon-Enhanced Electrochemical Reduction of CO_2 at Voltage-Biased Electrodes
Molecular Foundry User Proposal No. 6755, 6037, 6004, 5054, 4371, 3853

Conference Activity and Presentations

Conferences Organized

2022 Electrochemistry Gordon Research Seminar, Chair
2022 Electrochemistry Tutorial Session (Invited Talks), AIChE Annual Meeting, Co-Chair

Invited Research Presentations

1. *In Situ Characterization of Interfacial Properties in (Photo)Electrochemical Systems.* University of Nebraska–Lincoln, Dept. of Chemical & Biomolecular Engineering, Lincoln, NE. April 15, 2022.
2. *(Photo)Electrochemical Conversion for Sustainable Fuels and Chemicals.* University of Washington, Dept. of Chemical Engineering, Distinguished Young Scholars Seminar, Virtual. July 12, 2021.
3. *Plasmon-Enhanced Electrochemical Reduction of Carbon Dioxide.* National Chemical Engineering Future Faculty Seminar Series, Virtual. May 28, 2021.
4. *Directing Selectivity of Electrochemical CO_2 Reduction at Plasmonic Cathodes.* SLAC National Accelerator Laboratory, Virtual. September 17, 2020.

Conference Presentations

1. *In Situ Characterization of Interfacial Properties in (Photo)Electrochemical Systems.* AIChE Annual Meeting, Phoenix, AZ. November 15, 2022.
2. *Probing the Reaction Microenvironment during Electrochemical Nitrate Reduction.* AIChE Annual Meeting, Phoenix, AZ. November 17, 2022.
3. *Probing the Interfacial Electrolyte Environment during Nitrate Reduction.* Electrochemistry Gordon Research Conference, Ventura, CA. September 15, 2022.
4. *Effect of Pressure and Temperature on Carbon Dioxide Reduction at a Plasmonically Active Silver Cathode.* AIChE Annual Meeting, Boston, MA. November 8, 2021.
5. *Plasmon-Enhanced Electrochemical Reduction of Carbon Dioxide at a Copper–Silver Cathode.* AIChE Annual Meeting, Virtual. November 16, 2020.
6. *Directing Selectivity of Electrochemical CO_2 Reduction Using Plasmonics.* Electrochemistry Gordon Research Seminar, Ventura, CA. January 5, 2020.
7. *Directing Selectivity of Electrochemical CO_2 Reduction at Plasmonic Cathodes.* AIChE Annual Meeting, Orlando, FL. November 14, 2019.
8. *Photoelectrochemical CO_2 Reduction at Plasmonic Nanostructured Silver Electrodes.* AIChE Annual Meeting, Pittsburgh, PA. October 29, 2018.
9. *Surface Plasmon-Assisted Photoelectrochemical CO_2 Reduction on Well-Defined Nanostructured Silver Electrodes.* AIChE Annual Meeting, Minneapolis, MN. October 31, 2017.
10. *Plasmon-Enhanced Photocatalytic CO_2 Reduction on Nanostructured Composite Electrodes.* AIChE Annual Meeting, San Francisco, CA. November 15, 2016.

Conference Posters

1. Electrochemistry Gordon Research Conference, Ventura, CA. 2020 and 2022.
2. SUNCAT Center for Interface Science and Catalysis Summer Institute, Virtual. August 18, 2021.
3. eRefinery External Research Afternoon, Delft, The Netherlands. November 6, 2019.
4. Next Generation Electrochemistry, Chicago, IL. June 6, 2019.
5. BERC Energy Summit, Berkeley, CA. February 2, 2018.
6. Joint Center for Artificial Photosynthesis All Hands Meetings, CA. 2017–2020.

Service

2022	*Invited Panelist*, Next Generation Electrochemistry, University of Illinois at Chicago
2017 - 2022	*Science Fair Judge*, OUSD and WCCUSD Science Fairs
2021	*Co-Chair*, Stanford–SLAC National Accelerator Laboratory Water Research Exchange
2021 - 2022	*Invited Speaker*, Engineering Research Experience for Undergraduates, Stanford University
2021	*Keynote Speaker*, AIChE Midwest Regional Conference Engineering Career Day
2015 - 2020	*Event Co-Chair, Logistics Co-Chair*, Expanding Your Horizons, UC Berkeley
2015 - 2020	*Speaker Coordinator*, CBE Graduate Student Advisory Committee, UC Berkeley
2016 - 2019	*Student Recruitment Chair*, Young Alumni Council, Illinois Institute of Technology
2012 - 2013	*Finance Committee Co-Chair, Board Member*, Women in Cleantech and Sustainability

Teaching Experience

2022	**Guest Lecturer** Introduction to Chemical Engineering (CHEMENG 20), Stanford University
2021	**Guest Lecturer** Catalytic Reaction Engineering (CHE 102), UC Riverside Advanced Characterization Techniques (MAT SCI 242), UC Berkeley Introduction to Chemical Engineering (CHEMENG 20), Stanford University
2020	**Guest Lecturer** Supervised Teaching of Chemical Engineering (CHM ENG 375), UC Berkeley
2020	**Panelist**, Preparing for the Semester Teaching Conference for GSIs, UC Berkeley
2020	**Workshop Instructor**, Best Practices in Remote Instruction for CBE Faculty Chemical and Biomolecular Engineering, UC Berkeley
2019	**Certificate of Teaching and Learning in Higher Education** Graduate Student Instructor Teaching and Resource Center, UC Berkeley
2019	**Guest Lecturer**, Advanced Characterization Techniques MAT SCI 242, Materials Science & Engineering, UC Berkeley
2018	**Graduate Student Instructor**, Dynamics and Control of Chemical Processes CHM ENG 162, Chemical and Biomolecular Engineering, UC Berkeley
2016	**Graduate Student Instructor**, Introduction to Chemical Process Analysis CHM ENG 140, Chemical and Biomolecular Engineering, UC Berkeley
2008 - 2010	**Lead Tutor**, Chemical Engineering and Chemistry Academic Resource Center, Illinois Institute of Technology
2008 - 2010	**Teaching Assistant**, Introduction to Computer Programming (CS 105) Computer Science Department, Illinois Institute of Technology

Mentoring

2022 - Pres.	Milenia Rojas Mendoza, *Stanford Chemical Engineering Ph.D. student*
2021 - Pres.	Jinyu Guo, *Stanford Chemical Engineering Ph.D. candidate*
	Matthew Liu, *Stanford Chemical Engineering Ph.D. candidate*
	Valerie Niemann, *Stanford Chemical Engineering Ph.D. candidate*
2018 - 2020	Ananya Subramani, *UC Berkeley Chemical Engineering undergraduate*
2017 - 2018	Matthew Liu, *UC Berkeley Chemical Engineering undergraduate*
2017 - 2018	Davis Perez, *UC Berkeley Chemistry undergraduate*
2017	Adrian Davey, *UC Berkeley Amgen Scholar*