CAMERON J. BODENSCHATZ

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EDUCATION

Doctor of Philosophy in Chemical Engineering
Clemson University, Clemson, SC (expected May 2017)
GPA: 3.90/4.00
Thesis Advisor: Dr. Rachel Getman
Thesis Project: A Combined Density Functional Theory and Monte Carlo Approach for Quantifying Catalytic Energies in a Liquid Environment

Bachelor of Science in Chemical Engineering
Honors in Engineering, Honors Research Distinction in Mechanical Engineering
The Ohio State University, Columbus, OH (June 2012)
GPA: 3.55/4.00 – Cum Laude Major GPA: 3.59/4.00
Thesis Advisor: Dr. Shaurya Prakash
Thesis Project: Design and Fabrication of an Active Membrane Desalination Module

PUBLICATIONS

Bodenschatz, C.J.; Sarupria, S.; Getman R.B. Molecular-Level Details about Liquid H_2O Interactions with CO and Sugar Alcohol Adsorbates on Pt(111) Calculated Using Density Functional Theory and Molecular Dynamics. *J. Phys. Chem. C.* **2015**, *119*, 13642-13651. **DOI: 10.1021/acs.jpcc.5b02333.**

HONORS AND ACHIEVEMENTS

Space Technology Research Fellowship, awarded by NASA to approximately 85 PhD candidates nationwide in 2014. Provides more than $70,000 per year in research funding. Academic years covered: 2014-2017.

Conference Travel Grant, awarded by the Catalysis and Reaction Engineering Division of the American Institute of Chemical Engineers, for travel to the AIChE annual meeting, November 2014. There were 29 applicants for the award and 20 awards were given.

Conference Travel Award, awarded by the International Conference on Environmental Catalysis, for travel to the ICEC biennial conference, August 2014.

2nd Place in Engineering, Denman Undergraduate Research Forum at The Ohio State University, May 2012

Outstanding Undergraduate Award for Research Excellence, The Ohio State University Dept. of Chemical and Biomolecular Engineering, May 2012

Undergraduate Research Scholarship, The Ohio State University College of Engineering, September 2011

Outstanding Co-op Student Award, The Ohio State University Dept. of Chemical and Biomolecular Engineering, March 2011

RESEARCH EXPERIENCE

Ph.D. Candidate
NASA Space Technology Research Fellow (2014-Present)
Graduate Research Assistant (2012-2014)
Clemson University, The Department of Chemical and Biomolecular Engineering (2012-present)

- Performed computational simulations to analyze solvation and adsorbate coverage effects on reaction thermodynamics and kinetics on the metal anode catalyst of direct methanol fuel cells
- Utilized various modeling techniques including density functional theory and classical molecular dynamics to develop a multi-scale simulation methodology for liquid-phase, heterogeneously-catalyzed reaction systems
- Utilized various molecular modeling software packages including the Vienna Ab-Initio Simulation Package (VASP), the Large-scale Atomic/Molecular Massively Parallel Simulator (LAMMPS), Gaussion09, and Nanoscale Molecular Dynamics (NAMD)

Undergraduate Research Assistant
The Ohio State University, Department of Mechanical and Aerospace Engineering (2008-2010)

- Worked on DARPA funded project to deploy concentration polarization mitigation techniques in reverse osmosis membrane desalination modules
- Engineered and constructed lab-scale prototypes of a disc-tube reverse osmosis desalination module for use in future experiments
- Implemented solution-based electroless gold-plating methods to gold-plate polymer membranes for reverse osmosis and forward osmosis applications

PRESENTATIONS

Bodenschatz, C.J.; Getman, R.B. "A Comparison of Explicit Solvation Models for Density Functional Theory Simulations of Heterogeneously-Catalyzed Systems," poster presentation at the Annual Meeting of the American Institute of Chemical Engineers, Atlanta, GA. November 17th, 2014.

Bodenschatz, C.J.; Getman, R.B. "A Combined Density Functional Theory and Molecular Dynamics Approach for Quantifying Catalytic Energies in Water," oral presentation at the Annual Meeting of the American Institute of Chemical Engineers, Atlanta, GA. November 17th, 2014.

Bodenschatz, C.J.; Getman, R.B. "A Combined Density Functional Theory and Molecular Dynamics Approach for Quantifying Catalytic Energies in a Water Environment," oral presentation at the 13th Annual Symposium of the Southeastern Catalysis Society, Asheville, NC. September 15th, 2014.

Bodenschatz, C.J.; Getman, R.B. "A Combined Density Functional Theory and Molecular Dynamics Approach for Quantifying Catalytic Energies in a Water Environment," oral-poster presentation at the 8th International Conference on Environmental Catalysis, Asheville, NC. August 26th, 2014.

Bodenschatz, C.J.; Getman, R.B. "Analysis of Solvation Model, Adsorption Site, and Adsorbate Coverage Effects on Adsorption Energies at the Anode in Direct Methanol Fuel Cells," poster at the 9th Annual Materials Research Society and Optical Society of America Materials and Optics Poster Session, Clemson, SC. March 12th, 2014.

Bodenschatz, C.J.; Getman, R.B. "Analysis of Solvation Model, Adsorption Site, and Adsorbate Coverage Effects on Adsorption Energies at the Anode in Direct Methanol Fuel Cells," poster at the 2nd Annual Chemical and Biomolecular Engineering Graduate Research Symposium, Clemson, SC. March 5th, 2014.

Bodenschatz, C.J.; Getman, R.B. "Analysis of Solvation Model, Adsorption Site, and Adsorbate Coverage Effects on Adsorption Energies at the Anode in Direct Methanol Fuel Cells," poster at the 12th Annual Symposium of the Southeastern Catalysis Society, Asheville, NC. September 29th, 2013.

Bodenschatz, C.J.; Prakash, S. "Design and Fabrication of an Active Membrane Desalination Module," poster at the Denman Undergraduate Research Forum at The Ohio State University, Columbus, OH. May 9th, 2012

PROFESSIONAL EXPERIENCE

National Aeronautics and Space Administration May 2015 – July. 2015

Visiting Technologist Intern

- Studied methods for obtaining cumulative surface reaction rate information from elementary step rate data such as Kinetic Monte Carlo and Mean Field Theory
- Began implementation of Kinetic Monte Carlo code for studying surface coverage and solvation effects on the overall rate of methanol decomposition on platinum(111)

Micron Technology, Inc. Mar. 2010 – Sept. 2010

Facilities Chemical Engineering Intern

- Completed a study on code limitations of gas quantities kept in buildings on-site
- Completed a design project to add capacity to the site solvent waste system
- Completed a slurry dilution calculator spreadsheet for corporate Facilities to be used across all Micron sites

RELEVANT COURSE WORK

Chemical and Biomolecular Engineering: Chemical Engineering Thermodynamics, Chemical Engineering Reaction Kinetics, Advanced Transport Phenomena, Molecular Modeling, Applied Numerical Methods in Process Simulation
Chemistry: Quantum Chemistry, Scientific Computing, Statistical Thermodynamics
Environmental Engineering and Science: Atomistic Modeling in Environmental Science
Mathematics: Advanced Engineering Mathematics

MEMBERSHIPS & ACTIVITIES

Treasurer, Graduate Research and Discovery Symposium Committee, Clemson University Graduate Student Government	2015-present
Elected Senator, Clemson University Graduate Student Government	2014-present
Member, Chemical Engineering Graduate Student Organization	2012-present
Member, American Institute of Chemical Engineers	2012-present
Associate Member, Sigma Xi, The Scientific Research Society	2013-present
Treasurer, Kappa Theta Epsilon National Co-op Honor Society	2011-2012
Treasurer, “A Very Share-y Halloween” philanthropy project	2008