



Joel Schneider

Ph.D. Student in Chemical Engineering, admitted Autumn 2015

Bio

BIO

Joel is interested in nanotechnology research and the chemical tools and understanding we can use to leverage it, as well as education and the role of active learning engagement strategies. His research in the Bent group is focused on understanding and controlling surface chemistry in atomic layer deposition (ALD) processes and applying this knowledge to understand chemical problems in nano-electronics. Much of his research focuses on developing an atomic understanding of these systems using a variety of sensitive reaction monitoring equipment.

HONORS AND AWARDS

- Gerald J. Lieberman Fellow, Stanford University (2020)
- Centennial Teaching Assistant Award, Stanford University (2019)
- David M. Mason Graduate Fellow, Stanford University (2018)
- Student Projects for Intellectual Community Enhancement Grant Recipient, Stanford University (2018)
- Graduate Research Fellow, National Science Foundation (2015-2020)
- D. Reid Weedon Award, Massachusetts Institute of Technology (2015)
- Peter and Sharon Fiekowsky Award for Excellence in Teaching, Massachusetts Institute of Technology (2015)
- ESG Excellence in Community Service Award, Massachusetts Institute of Technology (2014)
- Most Outstanding Freshman in Academics and Research Award, Massachusetts Institute of Technology (2012)
- Drake Physics Prize, Drake University (2011)
- Kappa Mu Epsilon Mathematics Award, Drake University (2011)
- Marvin James Fink Professional Engineering Scholar, Roosevelt Foundation (2011)
- Meggie Malm Scholar, Roosevelt Foundation (2011)
- Top 50 in the country, US National Chemistry Olympiad (USNCO) (2010-2011)
- Eagle Scout with Bronze, Silver, and Gold Palms, Boy Scouts of America (2010)
- Top 50 in the country, US National Physics Olympiad (USAPhO) (2010)
- Global Top 16, High School Mathematics Competition in Modeling, Consortium for Mathematics and Its Applications (COMAP) (2008-2011)

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

- Member, American Chemical Society (2019 - present)
- Member, American Vacuum Society (2018 - present)
- Member, Stanford University Chemical Engineering Faculty Search Committee (2018 - 2019)

- President, Stanford Chemical Engineering Graduate Student Action Committee (2017 - 2018)
- Chair, Stanford University Chemical Engineering Ph.D. Recruitment Committee (2016 - 2018)
- Vice President, Stanford Chemical Engineering Graduate Student Action Committee (2016 - 2017)
- Member, Phi Beta Kappa Honor Society (2015 - present)
- Member, Tau Beta Pi Engineering Honor Society (2013 - present)
- Co-Chair, MIT Spring Career Fair Planning Committee (2013 - 2014)
- Executive Board Member, American Institute of Chemical Engineering, MIT Chapter (2012 - 2015)
- Member, MIT Office of Digital Learning Task Force on Opportunities and Design of Online Education (2012 - 2013)
- Instructor, Massachusetts Institute of Technology Educational Studies Program (2011 - 2015)

EDUCATION AND CERTIFICATIONS

- MS, Stanford University , Chemical Engineering (2017)
- BS, Massachusetts Institute of Technology , Mathematics (2015)
- BS, Massachusetts Institute of Technology , Chemical Engineering (2015)

SERVICE, VOLUNTEER, AND COMMUNITY WORK

- Mentor (2018)
- Mentor (2016)
- Community Associate (2016)
- Head Community Associate (2019)
- Volunteer (2017)
- Mentor (2017)
- President (2013 - 2014)
- Community Service Chair (2011 - 2012)

LINKS

- LinkedIn: <https://www.linkedin.com/in/joel-schneider/>
- Bent Group Website: <http://bentgroup.stanford.edu/>

Teaching

COURSES

2019-20

- Kinetics and Reactor Design: CHEMENG 170 (Spr)

Professional

WORK EXPERIENCE

- Researcher - Chemical Engineering Project Laboratory, MIT (2014 - 2015)
- Formulation Scientist - Industrial Engine Oils Division, Chevron Oronite (2013)
- Curriculum Developer and Media Producer - Experimental Study Group, Massachusetts Institute of Technology (2012 - 2015)

Publications

PUBLICATIONS

- **Identification of highly active surface iron sites on Ni(OOH) for the oxygen evolution reaction by atomic layer deposition** *JOURNAL OF CATALYSIS*
Baker, J. G., Schneider, J. R., Paula, C., Mackus, A. M., Bent, S. F.
2021; 394: 476–85
- **Revealing and Elucidating ALD-Derived Control of Lithium Plating Microstructure** *ADVANCED ENERGY MATERIALS*
Oyakhire, S. T., Huang, W., Wang, H., Boyle, D. T., Schneider, J. R., de Paula, C., Wu, Y., Cui, Y., Bent, S. F.
2020
- **The Influence of Ozone: Superstoichiometric Oxygen in Atomic Layer Deposition of Fe₂O₃ Using tert-Butylferrocene and O-3** *ADVANCED MATERIALS INTERFACES*
Schneider, J. R., Baker, J. G., Bent, S. F.
2020
- **Nucleation Effects in the Atomic Layer Deposition of Nickel-Aluminum Oxide Thin Films** *CHEMISTRY OF MATERIALS*
Baker, J. G., Schneider, J. R., Raiford, J. A., de Paula, C., Bent, S. F.
2020; 32 (5): 1925–36
- **The Role of Aluminum in Promoting Ni-Fe-OOH Electrocatalysts for the Oxygen Evolution Reaction** *ACS APPLIED ENERGY MATERIALS*
Baker, J. G., Schneider, J. R., Torres, J., Singh, J. A., Mackus, A. M., Bajdich, M., Bent, S. F.
2019; 2 (5): 3488–99
- **Synthesis of Doped, Ternary, and Quaternary Materials by Atomic Layer Deposition: A Review** *CHEMISTRY OF MATERIALS*
Mackus, A. M., Schneider, J. R., MacIsaac, C., Baker, J. G., Bent, S. F.
2019; 31 (4): 1142–83
- **Atomic and Molecular Layer Deposition of Hybrid Mo-Thiolate Thin Films with Enhanced Catalytic Activity** *ADVANCED FUNCTIONAL MATERIALS*
MacIsaac, C., Schneider, J. R., Closser, R. G., Hellstern, T. R., Bergsman, D. S., Park, J., Liu, Y., Sinclair, R., Bent, S. F.
2018; 28 (26)

PRESENTATIONS

- Elucidation of the Mechanisms of Nickel (II) and Iron (III) Oxide Films Grown with Ozone by Atomic Layer Deposition - American Vacuum Society International Conference on Atomic Layer Deposition (July 31, 2018)