Saeed Kazemiabnavi

Curriculum Vitae

CONTACT INFORMATION

2300 Hayward St.,
2029 H. H. Dow Bldg.
Ann Arbor, MI 48109

☎ (734)-615-8815
✉ skazemi@umich.edu
www.kazemi.webs.com

RESEARCH INTERESTS

- Computational Mechanics and Materials Science
- Battery, Fuel Cell and Energy Storage Systems

EDUCATION

University of Michigan, Ann Arbor, MI — 2016-2019

Ph.D., Mechanical Engineering — **GPA: 4.00/4.00**

- Advisor: Katsuyo Thornton

University of Michigan, Ann Arbor, MI — 2014-2016

M.S., Mechanical Engineering — **GPA: 4.00/4.00**

- Advisors: Katsuyo Thornton and Donald J. Siegel

Sharif University of Technology, Tehran, Iran — 2008-2013

B.S., Mechanical Engineering — **GPA: 3.70/4.00**

B.S., Chemistry — **GPA: 4.00/4.00**

- Advisor: Mohammad Behshad Shafii

PROFESSIONAL EXPERIENCES

Graduate Student Research Assistant — Aug 2014 - Present

Thornton Research Group, University of Michigan

- High Capacity Electrode Materials for Rechargeable Batteries

Research Assistant — Aug 2013 - Aug 2014

Computational Nanoscience Laboratory, Washington State University

- Multi-Scale Modeling of High Performance Lithium-Air Batteries

Undergraduate Research Assistant — Sep 2011 - Jun 2013

Microfluidics Research Laboratory, Sharif University of Technology

- Design and Fabrication of a Magneto Hydrodynamic Micropump

PEER-REVIEWED JOURNAL AND CONFERENCE PUBLICATIONS

1. **Kazemiabnavi, S.**, Zhang, Z., Thornton, K., Banerjee, S. "Electrochemical Stability Window of Imidazolium-Based Ionic Liquids as Electrolytes for Lithium Batteries." *J. Phys. Chem. B*, 120 (25), 5691–5702, 2016.
2. Yoo, K., Dive, A.M., **Kazemiabnavi, S.**, Banerjee, S., Dutta, P. "Effects of Operating Temperature on the Electrical Performance of a Li-Air Battery Operated with Ionic Liquid Electrolyte." *Electrochimica Acta*, 194, 317–329, 2016.
3. Ramazani, A., **Kazemiabnavi, S.**, Larson, R. "Quantification of Ferrite-Martensite Interface in Dual Phase Steels: A First-Principles Study." *Acta Materialia*, 116, 231–237, 2016.
4. Ramazani, A., Abbasi, M., **Kazemiabnavi, S.**, Schmauder, S., Larson, R., Prahl, U. "Development and Application of a Microstructure-Based Approach to Characterize and Model Failure Initiation in DP Steels using XFEM." *Materials Science and Engineering A*, 660, 181–194, 2016.

5. **Kazemiabnavi, S.**, Dutta, P., Banerjee, S. "A Density Functional Theory Based Study of the Electron Transfer Reaction at the Cathode-Electrolyte Interface in Lithium-Air Batteries." *Phys. Chem. Chem. Phys.*, 17, 11740–11751, 2015.

6. **Kazemiabnavi, S.**, Dutta, P., Banerjee, S. "Density Functional Theory Based Study of the Electron Transfer Reaction at the Lithium Metal Anode in a Lithium-Air Battery with Ionic Liquid Electrolytes." *J. Phys. Chem. C*, 118 (47), 27183–27192, 2014.

7. **Kazemiabnavi, S.**, Soundararaj, A., Zamani, H., Scharf, B., Thyagarajan, P., Zhou, X. "A Comparative Study of Hydrogen Storage and Hydrocarbon Fuel Processing for Automotive Fuel Cells." *ASME IMECE 2015*, 6B, 1–7, November 13–19, 2015, Houston, TX.

8. **Kazemiabnavi, S.**, Dutta, P., Banerjee, S. "Ab Initio Modeling of the Electron Transfer Reaction Rate at the Electrode-Electrolyte Interface in Lithium-Air Batteries." *ASME IMECE 2014*, 6A, 1–6, November 14–20, 2014, Montreal, Canada.

9. **Kazemiabnavi, S.**, Haghayegh, S., Karmozdi, M., Shafii, M. B., Salari, A. "Experimental Investigation on the Effect of Stimulating Frequency on the Reciprocating Motion of Mercury in a Micro Cavity." *ICTMME' 2012*, 1, 121–125 July 15–16, 2012, Singapore.

10. Haghayegh, S., **Kazemiabnavi, S.**, Karmozdi, M., Shafii, M. B., Amini, A. "Experimental Investigation on the Effect of Micro Cavity-Micro Channel Angle on the Reciprocating Motion of Mercury in a Micro Cavity." *ICTMME' 2012*, 1, 118–120 July 15–16, 2012, Singapore.

Conference Proceedings

1. **Kazemiabnavi, S.**, Dutta, P., Banerjee, S. "Theoretical Investigation of the Electron Transfer Reaction at the Cathode-Electrolyte Interface in Lithium-Air Battery." *MRS Spring Meeting and Exhibit*, April 6–10, 2015, San Francisco, CA.

2. **Kazemiabnavi, S.**, Dutta, P., Banerjee, S. "Modeling the Electron Transfer Reaction at the Lithium Metal Anode-Liquid Electrolyte Interface in Lithium-Air Batteries." *249th ACS National Meeting, Division of Energy and Fuels (ENFL)*, March 22–26, 2015, Denver, CO.

Poster Presentations

1. **Kazemiabnavi, S.**, Malik, R., Orvananos, B., Abdellahi, A., Thornton, K., Ceder, G. "Kinetics of Intercalation in Core-Shell Active Cathode Particles." *AVS Michigan Chapter 41st Spring Symposium*, May 25, 2017, Ann Arbor, MI, USA.

2. Nagy, K., **Kazemiabnavi, S.**, Siegel, D. J. "Theoretical Overpotentials for Metal Anodes." *PRiME 2016, 230th ECS Meeting*, October 2-7, 2016, Honolulu, HI, USA.

3. **Kazemiabnavi, S.**, Nagy, K., DeWitt, S., Thornton, K., Siegel, D. J. "First-Principles Study of Nucleation on Metallic Anodes." *JCESR Full Program Meeting*, April 11, 2016, Lemont, IL, USA.

4. Nagy, K., **Kazemiabnavi, S.**, Siegel, D. J. "Theoretical Prediction of Metal Anode Overpotentials." *JCESR Full Program Meeting*, April 11, 2016, Lemont, IL, USA.

5. **Kazemiabnavi, S.**, Banerjee, S. "Density Functional Theory Based Study of The Electron Transfer Reaction Rates at the Electrode-Electrolyte Interfaces in Lithium-Air Batteries." *Engineering Graduate Symposium*, University of Michigan, November 14, 2014, Pullman, WA.

6. **Kazemiabnavi, S.**, Yoo, K., Deshpande, A., Dutta, P., Banerjee, S. "Design of Molecularly Tailored Electrolytes for High Performance Lithium Batteries." *JCATI Annual Research Symposium*, April 21, 2014, Pullman, WA.

7. **Kazemiabnavi, S.**, Banerjee, S. "Ab Initio Modeling of Reaction Rates at the Electrode-Electrolyte Interfaces of Lithium-Air Batteries." *MME Student Day*, Washington State University, April 25, 2014, Pullman, WA.

Working Papers

1. **Kazemiabnavi, S.**, Malik, R., Orvananos, B., Abdellahi, A., Thornton, K., Ceder, G. "Kinetics of Diffusion-limited Intercalation in Core-Shell Active Cathode Particles." *In prep.*

2. **Kazemiabnavi, S.**, Nagy, K., DeWitt, S., Thornton, K., Siegel, D. J. "First Principles Study of Nucleation Phenomena on Magnesium Electrodes." *In prep.*

Honors and Awards

- **Towner Prize for Distinguished Academic Achievement** Mar 2017
  College of Engineering, University of Michigan, Ann Arbor, MI, U.S.A
- **Rackham International Student Fellowship** Dec 2015
  Rackham Graduate School, University of Michigan, Ann Arbor, MI, U.S.A
- **Best Graduate Research Poster Award** Apr 2014
  MME Student Day, Washington State University, Pullman, WA, U.S.A
- **Bronze Medal Winner** Aug 2013
  The 6$^{\text{th}}$ International Scientific Olympiad (Chemistry), Isfahan, Iran
- **Best Undergraduate Student Award** Aug 2012
  Department of Chemistry, Sharif University of Technology, Tehran, Iran
- **Gold Medal Winner** Sep 2007
  The 17$^{\text{th}}$ Iranian National Chemistry Olympiad, Tehran, Iran

Volunteer Experiences

- **Student Judge, MEUS** Apr 2016 - Apr 2017
  Mechanical Engineering Undergraduate Symposium, University of Michigan
- **Weekly Departmental Seminar Coordinator** Oct 2013 - Apr 2014
  School of Mechanical and Materials Engineering, Washington State University

Leadership Experiences

- **Web and Social Media Chair, MEGC** Sep 2016 - Present
  Mechanical Engineering Graduate Council (MEGC), University of Michigan

Skills

Instrumental Skills

- Gas Chromatography (GC), GC-Mass Spectrometry
- UV-Vis and Infrared (IR) Spectroscopy
- Cyclic Voltammetry (CV), Electrochemical Impedance Spectroscopy (EIS)

Computer Skills

- **Programming**: C++, Fortran, MATLAB
- **Softwares**: VASP, Gaussian 09, Quantum Espresso, NWChem, LabVIEW, Simulink, ANSYS, SolidWorks, CATIA, AutoCAD, KeyShot Pro, LaTeX, Microsoft Office

Professional Memberships

- American Society of Mechanical Engineers (ASME) *Student Member*
- American Chemical Society (ACS), Division of Energy and Fuels *Regular Member*
- Materials Research Society (MRS) *Student Member*
- Electrochemical Society (ECS), Battery Division *Student Member*
- Material Advantage Program *Student Member*