

NANO KOREA 2020

July 1~3, KINTEX, Korea

Donald J. Siegel

Professor & Assoc. Chair For Graduate Education, Mechanical Engineering Department, University of Michigan

Address: G.G. Brown, 2350 Hayward St. RM 2370, Ann Arbor MI 48109-2125, USA

Telephone: +1 734-546-3780

Fax: +1 734-764-4256

E-mail: djsiegel@umich.edu

Nationality: USA

Web: www.umich.edu/~djsiegel

EDUCATION

Univ. Illinois at Urbana-Champaign	PhD	Physics	2001
Case Western Reserve University	BS	Physics	1995

PROFESSIONAL ACTIVITIES

- Professor, Mechanical Engineering, Materials Science & Engineering, and Applied Physics Program, University of Michigan (2009-present)
- Senior Investigator & Member of the Directorate, Joint Center for Energy Storage Research (JCESR) (2013-present)
- VELUX Visiting Professor, Dept. of Energy Conversion & Storage, Technical University of Denmark (2015-2016)
- Technical Expert & Group Leader, Ford Motor Company (2005-2009)
- National Acad. of Sciences/NRC Postdoctoral Fellow, U.S. Naval Research Lab (2004-2005)
- Postdoctoral Researcher, Sandia National Laboratories (2001-2004)

AWARD AND HONORS

- KAIST BK21 Lectureship, 2019
- U.S. Department of Energy, Secretary of Energy's Achievement Award, 2018
- NAE Gilbreth Lecturer, 2014
- NSF CAREER Award, 2013

MAIN SCIENTIFIC PUBLICATION

- A. Ahmed, S. Seth, J. Purewal, A. G. Wong-Foy, M. Veenstra, A. J. Matzger, and D. J. Siegel, *Exceptional Hydrogen Storage Achieved by screening Nearly Half a Million Metal-Organic Frameworks*, Nature Communications, **10**, 1568 (2019). DOI: 10.1038/s41467-019-09365-w
- S. Yu and D. J. Siegel, *Grain Boundary Softening: A Potential Mechanism for Lithium Metal Penetration Through Stiff Solid Electrolytes*, ACS Applied Materials & Interfaces, **10**, 38151-38158 (2018). DOI: 10.1021/acsami.8b17223
- S. Kiyabu, J. S. Lowe, A. Ahmed, and D. J. Siegel, *Computational Screening of*

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Hydration Reactions for Thermal Energy Storage: New Materials and Design Rules, Chemistry of Materials, **30**, 2006-2017 (2018). DOI: 10.1021/acs.chemmater.7b05230

- A. Sharafi, E. Kazyak, A. L. Davis, S. Yu, T. Thompson, D. J. Siegel, N. P. Dasgupta, and J. Sakamoto, *Surface Chemistry Mechanism of Ultra-Low Interfacial Resistance in the Solid-State Electrolyte $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$* , Chemistry of Materials, **29**, 7961-7968 (2017). DOI: 10.1021/acs.chemmater.7b03002
- T. Thompson, S. Yu, L. Williams, R. D. Schmidt, R. Garcia-Mendez, J. Wolfenstine, J. L. Allen, E. Kioupakis, D. J. Siegel, and J. Sakamoto, *Electrochemical Window of the Li-ion Solid Electrolyte $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$* , ACS Energy Letters **2**, 462-468 (2017). DOI:10.1021/acseenergylett.6b00593
- M. D. Radin, C. W. Monroe, and D. J. Siegel, *Impact of Space Charge Layers on Sudden Death in Li/O_2 Batteries*, Journal of Physical Chemistry Letters, **6**, 3017 (2015). DOI:10.1021/acs.jpcclett.5b01015
- J. Goldsmith, A. G. Wong-Foy, M. J. Cafarella, and D. J. Siegel, *Theoretical Limits of Hydrogen Storage in Metal-Organic Frameworks: Opportunities and Challenges*, Chemistry of Materials **25**, 3373 (2013). DOI: 10.1021/cm401978e^[1]_{SEP}
- M. D. Radin and D. J. Siegel, *Charge Transport in Lithium Peroxide: Relevance for Rechargeable Metal-Air Batteries*, Energy & Environmental Science **6**, 2370 (2013). DOI: 10.1039/C3EE41632A.

RESEARCH INTERESTS

- Materials and systems for energy storage; sustainable transportation; high-throughput materials discovery; computational materials science; thermodynamics, kinetics, and transport properties of materials; multi-scale modeling; machine learning; Integrated Computational Materials Engineering