A NanoBioLab Symposium 2021 Webinar

Prof. Kelsey Hatzell, Princeton University

ENGINEERING INTERFACES AND INTERPHASES FOR ALL SOLID STATE BATTERIES

Tuesday, February 23, 2021
9:00 - 10:00 am SGT

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ABSTRACT

Transportation accounts for 23% of energy-related carbon dioxide emissions and electrification is a pathway toward ameliorating these growing challenges. All solid state batteries could potentially address the safety and driving range requirements necessary for widespread adoption of electric vehicles. However, the power densities of all-solid state batteries are limited because of ineffective ion transport at solid|solid interfaces. New insight into the governing physics that occur at intrinsic and extrinsic interfaces are critical for developing engineering strategies for the next generation of energy dense batteries. However, buried solid|solid interfaces are notoriously difficult to observe with traditional bench-top and lab-scale experiments. In this talk I discuss opportunities for tracking phenomena and mechanisms in all solid state. This talk will discuss the role microstructure and interphase growth plays on transport and interfacial properties that govern adhesion. Quantification of salient descriptors of microstructure in solid state batteries is critical for understanding the mechanochemical nature of all solid state batteries.

ABOUT THE SPEAKER

Dr. Hatzell earned her Ph.D. in Material Science and Engineering at Drexel University, her M.S. in Mechanical Engineering from Pennsylvania State University, and her B.S./B.A. in Engineering/Economics from Swarthmore College. Hatzell's research group works on understanding phenomena at solid|liquid and solid|solid interfaces and works broadly in energy storage and conversion. Hatzell is the recipient of several awards including the ORAU Powe Junior Faculty Award (2017), NSF CAREER Award (2019), ECS Toyota Young Investigator Award (2019), finalist for the BASF/Volkswagen Science in Electrochemistry Award (2019), the Ralph "Buck" Robinson award from MRS (2019), and Sloan Fellowship in Chemistry (2020).

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