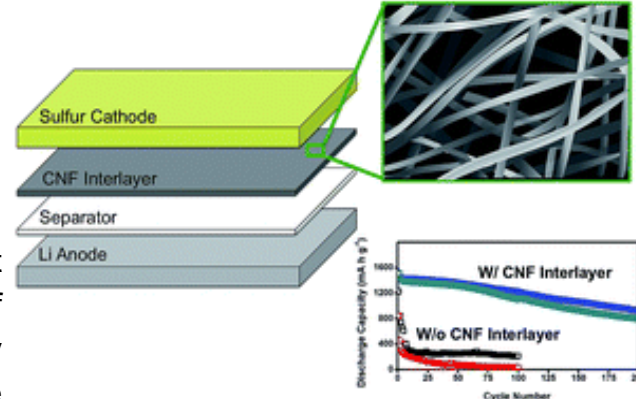


Study of New Materials for Next Generation Metal-Sulfur Batteries



Lithium-Sulfur is a next generation battery chemistry that offers a theoretical capacity of 1,675 mAh/g, an order of magnitude higher than that of the currently used Li-ion battery cathodes and a promise of >500Wh/kg energy density at the device-level. However, among other challenges, a serious challenge that has plagued the development of this technology is the dissolution and shuttle of intermediate polysulfides (Li_2S_x , $x=4-8$) in the electrolyte resulting in loss of active material and rapid capacity fade during cycling. I will present representative projects in my lab that integrate materials design & manufacturing, battery device assembly & testing (at coin and pouch cell level) and *postmortem* and *in-operando* spectroelectrochemistry to address several sulfur battery challenges from multiple directions.

Biography

Dr. Vibha Kalra is a Professor and the Director of the PhD Program in the Department of Chemical and Biological Engineering. Additionally, she serves as the associate editor of *Chemical Engineering Science* journal, since 2013. Kalra received her BS from the Indian Institute of Technology (IIT), Delhi, India in 2004 and PhD from Cornell University in 2009, both in Chemical Engineering. Prior to joining Drexel in the Fall of 2010, Kalra worked in the electronic packaging research division at Intel Corporation. Her research group combines material assembly & characterization, study of fundamental electrochemical behavior, in-situ spectroelectrochemistry, and device assembly and testing to develop unique nanoscale architectures for energy storage devices, including next-generation batteries and supercapacitors. She has published more than 50 peer-reviewed journal articles and has seven patents (2/7 issued; 5/7 pending) in the field of materials for energy storage. Kalra is a recipient of several awards including the NSF CAREER award (2012), ONR summer faculty fellowship (2013), AIChE DVS Outstanding Faculty of the Year Award (2015), Department of Chemical and Biological Engineering Outstanding Service Award (2018) and the College of Engineering Outstanding Research Award, both at assistant professor level (2015) and at mid-career level (2020), Provost Award for Outstanding Mid-Career Research Achievement (2020), and the COE Outstanding Innovation Award (2021)



Dr. Vibha Kalra
in the Department of Chemical
and Biological Engineering at
Drexel University.

Date: June 15, 2021

Time: 7:00 PM

This is a virtual seminar
on zoom.

To register for the event
please go to
asmephil.com
or

<https://www.eventbrite.com/e/study-of-new-materials-for-next-generation-metal-sulfur-batteries-tickets-158334772567>



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