**Scalable Syntheses of Mesoscale Materials for Energy Storage**

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**Abstract:** The last decade has witnessed the successes of nanoscale and mesoscale materials in addressing challenges in electrochemical energy storage devices. Complicated structures have been designed and fabricated. Unfortunately, the affordability and scalability of these materials have rarely been considered. Tedious procedure and/or expensive reagents are often used to achieve specific goals. We realize that it is urgent to reveal the fundamental chemistry that can potentially enable scalable manufacturing and processing of tailor-designed advanced materials with superior electrochemical performances. Currently, our research at OSU has been mainly focused on scalable chemistry, particularly for carbon materials, in energy devices, including Na-ion batteries and supercapacitors. In the talk, firstly, I will introduce what we have learned on hard carbon as anodes for Na-ion batteries. Secondly, I will talk about our recent discovery that NH3 activates carbon for nanoporosity generation and N-doping. Thirdly, I will present a simple but powerful ambient hydrolysis deposition (AHD) methodology that allows controllable and uniform coating of metal oxides on the surface of porous carbons. Lastly, I hope to introduce how magnesiothermic reactions can be useful for scalable nanomanufacturing.