Nanoscale templating with persistent micelles

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The ability to tune nanoscale features in traditional materials can enable new properties or enhanced performance in technologies ranging from pseudocapacitors to solar devices. Our lab takes inspiration from the promise of nanomaterials chemistry to advance the capabilities of devices for both energy conversion and storage. One of our core strategies is the design of novel block copolymer self-assembly systems that enable new levels of precision fabrication. In my talk, I will focus on recent developments where thermodynamic concepts are used to direct micelle entrapment for precision control during nanostructure self-assembly. The resulting tunable isomorphic architectures have widespread applications to advance (photo) electrochemical devices.

Speaker Biography

Morgan Stefik obtained a degree in Materials Engineering from Cal Poly SLO in 2005 before completing Doctoral studies in Materials Science at Cornell University under Prof. U Wiesner and Prof. F J DiSalvo in 2010. After two years of Post-doctoral research at École Polytechnique Fédérale de Lausanne with Prof. M Grätzel, he joined the University of South Carolina in 2013 as an Assistant Professor in the Department of Chemistry and Biochemistry. He is the founding Director of the South Carolina SAXS Collaborative, a NSF supported facility. His research focus is nanomaterials chemistry with emphasis on self-assembly techniques and atomic layer deposition.

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