

Carnegie Mellon University

Materials Science & Engineering

presents

Designing Functional Organic Nanomaterials for Electrochemical Energy Storage and Biosensors

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Abstract: Nanostructured materials become critically important in many areas of technology, ranging from renewable energy, electronics, and photonics to biology and medicine, because of their unusual physical/chemical properties due to confined dimensions of such materials. This talk will present a new class of polymeric materials we developed recently: nanostructured conducting polymer gels (nCPGs) that offer an array of advantageous features such as intrinsic 3D nanostructured conducting framework, excellent electronic and electrochemical properties, synthetically tunable structures and chemical interfaces. These functional organic building blocks have been demonstrated powerful for a number of significant applications in energy, environmental and health-related technologies. Several examples on developing nCPGs-based next-generation energy storage and biosensor devices will be discussed to illustrate 'structure-derived functions' of this special class of materials.

Bio: Dr. Guihua Yu is an Assistant Professor of Materials Science and Engineering at The University of Texas at Austin. He received his B.S. degree with the highest honor in chemistry from University of Science and Technology of China, and earned his Ph.D. in chemistry from Harvard University. His research focuses on rational synthesis and self-assembly of functional organic nanostructures and two-dimensional nanostructured solids with unique chemical and physical properties for advanced energy, environmental and healthcare technologies. He has received several notable awards and honors for young scientists, including most recent MIT Technology Review '35 Top Innovators Under 35', 3M Nontenured Faculty Award, Invitee to US Frontiers of Engineering hosted by National Academy of Engineering, Emerging Young Investigator named by both Royal Society of Chemistry (J. Mater. Chem.) and American Chemical Society (Chem. Mater.), ACS-PRF Young Investigator award, Ralph E. Powe Jr. Faculty Award, IUPAC Prize for Young Chemists.

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