Nanostructures for Energy and Flexible Electronics

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I will discuss our work related to nanostructures for energy devices and flexible electronics. In the first part, I will discuss the fabrications, properties and device applications of highly transparent paper. Different generations of transparent paper will be discussed. Nanostructures with tunable optical, electrical, ionic and mechanical properties will be discussed. Lab-scale demonstration devices will be briefly mentioned. In the second part, I will discuss fundamentals and structure designs for high-performance Na-ion battery, which is promising for large-scale Grid storage. In the third part, I will talk about our recent work on stuffed 2D materials with metal ions for energy storage and optoelectronics. A nano-scale planar battery is used as an enabling tool for nano-scale, in-situ fundamental studies of transport, optics and optoelectronics.

Bio

Liangbing Hu received his B.S. in applied physics from the University of Science and Technology of China (USTC) in 2002. He did his Ph.D. (with George Gruner) in ***at UCLA***, focusing on carbon nanotube based nanoelectronics. In 2006, he joined ***Unidym Inc*** (www.unidym.com) as a co-founding scientist. At Unidym, Liangbing's role was the development of roll-to-roll printed carbon nanotube transparent electrodes and device integrations into touch screens, LCDs, flexible OLEDs and solar cells. He worked (with Yi Cui) ***at Stanford University*** from 2009-2011, where he work on various energy devices based on nanomaterials and nanostructures. Currently, he is an ***assistant professor at University of Maryland College Park***. His research interests include nanomaterials and nanostructures, roll-to-roll nanomanufacturing, energy storage and conversion, and printed electronics.