

Graphene for Energy Storage: Making Batteries Smaller

Quan-Hong Yang

Tianjin University

Abstract:

Energy storage devices are required not only to be lighter (mass-based energy density) and faster (rate performance), which nanotechnology have done very well, but also to be smaller (volume-based energy density), that is, storing more energy in a limited space, which the present nanotechnology rarely does well. In this talk, I will present how graphenes make energy storage devices smaller by densifying popcorn-like graphenes into hardtack-like porous carbons by a self-assembly technology, namely nano-densification of hydro-gelled graphene by interfacial capillary drying. I will talk about strategies, methods, materials, electrodes and devices in building compact energy storage devices including supercapacitors, lithium ion batteries and post-lithium ion batteries.