

High Performance Supercapacitors

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Low-dimensional carbon polymorphs (such as graphene and carbon nanotubes (CNT)) are emerging as electrode-materials of choice in ultracapacitors, replacing activated-carbon based systems. This is attributed to their high mesoporosity, reasonable electrical conductivity and large specific surface area. Nevertheless, the current techniques used for fabrication of bulk-electrode materials using graphene and CNT's as building blocks, involve many processing steps, are limited to laboratory-scale and are often not amenable to large-scale production. In this context, we propose an inexpensive, easy-to-fabricate, scalable fabrication method that enables self-assembly of fullerene (C60) molecules to form oriented, ordered, highly porous, mechanically robust rods/tubes (FNT (fullerene nanotubes)) on single layer graphene (SLG) sheets supported on thin conductive substrates (e.g. Cu, indium tin oxide (ITO)).