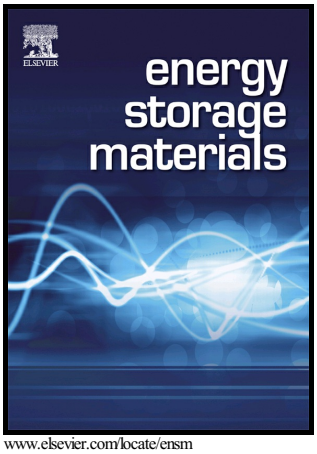

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Fabrication of Novel Powdery Carbon Aerogels with High Surface Areas for Superior Energy Storage

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Abstract

Carbon aerogels and their precursory polymer aerogels are an important class of porous materials, because they have a unique three-dimensional interconnected nanonetwork structure that can minimize diffusive resistance to mass transport. However, production of conventional aerogels in a monolithic form remains problematic, because of risk of explosive polymerization, tedious supercritical/freeze drying steps, extra ball milling, and difficulty in controlling micro/nanostructures. Here we show that novel powdery carbon aerogels and their polymer aerogel precursors have been developed by utilizing shape-persistent nanoparticles as building blocks, followed by hypercrosslinking for forming a well-defined 3D interconnected