# Block Copolymer Directed Synthesis of Sn-carbon-silica Nanocomposites as Anode Materials for Lithium-ion Batteries

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We report a facile 'one-pot' method for the synthesis of Sn-carbon-silica nanostructured composites through the selective interaction of resol (carbon precursor), tetraethylorthosilicate (TEOS), and tributylphenyltin (Sn precursor) with an amphiphilic diblock copolymer, poly (ethylene oxide-b-styrene), PEO-b-PS. A unique morphology transition from Sn nanowires to spherical Sn nanoparticles embedded in carbon/silica framework has been obtained. Metallic Sn species are homogeneously embedded in a rigid carbon/silica framework and are effectively confined within the mesostructures. The resulting composites are used as anode materials for lithium-ion batteries and exhibit high specific capacities (600 mA hg-1 at C/13 rate, 440 mA hg-1 at C/2 rate) and an excellent cyclability of over 100 cycles with high coulombic efficiency. Most of all, the novel method developed in this work for synthesizing functional hybrid materials can be extended to the preparation of various functional nanocomposites owing to its versatility and facileness.