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Nanostructured TiO₂/SnO₂ Templated by Amphiphilic Block Copolymer for Lithium-Ion Battery Anodes

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Lithium-ion batteries (LIBs) have been widely used in many aspects of modern life. Compared with conventional graphite anodes, TiO₂ possesses superior cyclic stability and environmental benignity. However, its moderate conductivity and lithium ion migration ability still need to be improved to realize further development. As alternative anode material, SnO₂ afforded much higher theoretical specific capacity (1494 mAhg⁻¹) as compared to TiO₂. However, the big volume change and the formation of the thick SEI film during the cycling caused serious capacity recession. After comparing the characteristic of TiO₂ and SnO₂, a novel TiO₂/SnO₂ composite anode has been designed through amphiphilic block copolymer assisted sol-gel process in the present study. The morphology of the obtained TiO₂/SnO₂ nanostructures are studied via scanning electron microscopy (SEM), the corresponding crystallization behavior is investigated with X-ray powder diffraction (XRD).

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