

Carbosilane-Assisted Synthesis of Silicon Based Composite for Li-ion Battery Anodes

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The possibility of using rechargeable Li ion batteries (LIBs) for various automobile and stationary power generation applications has generated significant research activities to improve their energy and power densities, cost, and cycling life. One area of active research is to replace graphite as the energy storage component in the anode with materials of higher storage capacities. Because silicon possesses the highest theoretical energy density among common elements, cheap, and easy to handle, it is an attractive candidate and a focus of investigations. In this study, nanostructured Si/SiC/C composite was synthesized by thermal treatment of carbosilane-capped silicon nanoparticles which was prepared by catalytic hydrosilylation of -H terminated silicon nanoparticles with carbosilane precursors. The results of using these composites as anode for a Li-ion battery, the charge/discharge behavior and cycling performances will be presented.