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Poly-dopamine coated graphite oxide / silicon composite as anode of lithium ion batteries

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Abstract

PDA/GO-Si composite is synthesized and tested as anode material for lithium ion batteries. Silicon nanoparticles were first cooperated with graphite oxide (GO) and then embedded into a poly-dopamine (PDA) layer. PDA provides accommodation of volume change and protection to prevent the direct contact of the Si surface with electrolyte during charge/discharge cycling. GO acts as both volume change buffer and conductive support for the electrode. An initial discharge capacity of $2903\text{mAh}\cdot\text{g}^{-1}$ was realized. A capacity of $1300\text{mAh}\cdot\text{g}^{-1}$ was maintained after 450 cycles. The excellent capacity reversibility and

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