In-situ N-doped graphene/$Li_4Ti_5O_{12}$ nanocomposites for lithium battery node

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The lower electrical conductivity of the LTO limits the rate capability at higher current rates. Recently, conducting materials such as carbon coating, graphene or nitridation has been applied to increase the electrical conductivity and electrochemical stability of the LTO. Recent reports suggested that the hybrid material of graphene/LTO exhibited an excellent electrochemical stability in lithium battery due to an improved electrical conductivity of LTO. Herein, we report on the preparation of *in-situ* N-doped G/LTO nanocomposites using diethylenetriamine (DETA) as a reducing agent as well as N-dopant to graphene sheets. The N-doping increases the electrical conductivity and ionic diffusion of the electrode. The effect of reduction and N-doping on the graphene oxide was systematically studied at gradual addition of DETA. The nanocomposite was fabricated as lithium battery anode and results were compared with pristine LTO and RGO/LTO prepared in the absence of DETA.