

Synthesis and Characterization of Doped $\text{Li}_4\text{Ti}_5\text{O}_{12}/\text{TiO}_2$ as Potential Anode Materials for Li-Ion Batteries

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Abstract : Several anode materials as transition metal oxides (Fe_3O_4 , SnO_2 , SnO , LiCoO_2 , and $\text{Li}_4\text{Ti}_5\text{O}_{12}$) has been used. Although titanium oxide has attracted great attention as a superior electrode for Li-ion batteries due to its excellent characteristic such as: high capacity, low cost and non-toxicity. In this work, the Synthesis and Characterization of Si Doped $\text{Li}_4\text{Ti}_5\text{O}_{12}$ with hydrothermal Method was electrochemically evaluated. The SEM images shows that the morphology of LTO powders sizes in the range 70nm. The electrochemical properties of synthesized nanopowders are investigated for use as an anode active material for lithium-ion batteries by galvanostatic techniques in Li-half cells, obtaining reversible discharge capacity of 173.8 mAh/g at 0.1C even upon 100 cycles. Though the doped powders exhibit an upgrade in The electrical conductivity, This is suitable for use as a high-power cathode material for lithium-ion batteries.

Keywords : LTO, li-ion, batteries, anode

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