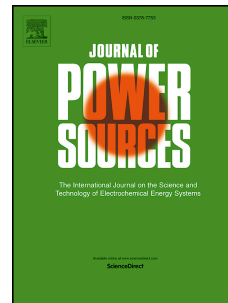


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Ethylene glycol-assisted hydrothermal synthesis and characterization of bow-tie-like lithium iron phosphate nanocrystals for lithium-ion batteries

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Abstract

In this work, we present a novel binary solvent of ethylene glycol/water medium (W/EG 50:50) that play an important role in the formation of the hierarchical meso-structures of bow-tie-like composition units composed of self-assembly lithium iron phosphate (LFP) nano-sheets. Ascorbic acid uses as inorganic carbon source and no other surfactant or template agent is applied. Results show that the crystallinity and the size of the particles depend on the nature of the solvent used. TEM results show that the sample prepared in ethylene glycol (EG-LFP/C) consists of well-distributed nanoparticles of size approximately 50 nm in diameter, which is uniformly embedded in thin carbon layers. The EG-LFP/C composite delivers the first discharge capacity of 166 mAh g⁻¹, i.e. 97.6% of the theoretical capacity, when tested under a discharge rate of 0.1 C. This material

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