Abstract Submitted
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Electrical and electrochemical characterization of nano-sized LiFePO4 cathode materials synthesized by a lauric acid-based sol–gel method KHADIJE BAZZI, AMBESH DIXIT, RATNA NAIK, VAMAN NAIK, PREM VAISHNAVA, ABBAS NAZRI, MARIAM NAZRI — We synthesized pure $LiFePO_4$ and C-$LiFePO_4$ nanoparticles by sol-gel technique. Carbon coating was accomplished by including Lauric acid in the sol-gel precursor solution. Three C-$LiFePO_4$ samples of particle sizes 29, 27, 23 nm, were prepared by varying lauric acid concentration in the precursor solution. All the samples were characterized by X-ray diffraction, Raman, conductivity, and electrochemical measurements. The micro-Raman measurements showed two major bands at 1350 and 1590 cm^{-1} respectively (I_D/I_G) and the electronic conductivity were found to depend strongly on the amount of surfactant coverage. The 23 nm particle size sample showed minimum (D/G) band ratio and the maximum electrical conductivity among the three samples. The measured value of the capacity for 23 nm sized sample, $\sim$ 170 mAh/g, approached the theoretical capacity limit value for $LiFePO_4$

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