THE INFLUENCE OF CALCINATION TEMPERATURE ON LITHIUM IRON PHOSPHATE (LFP) FORMATION BY USING SOLID STATE METHOD

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Abstract

Synthesis of cathode material Lithium Iron Phosphate (LFP) has been carried out. The first synthesis of cathode material LFP by using coprecipitation method to form FePO₄ precursor and then to form LFP precursor by using solid state method. The research has been done using raw materials Lithium Carbonate as Li ion, Iron(III) Chloride Hexahydrate as Fe ion, and Di-ammonium Hydrogen Phosphate as phosphate ion. In this research were used various of calcination temperature by 500°C, 550°C, 600°C, and 700°C with holding time for 10 hours. Characterization were done using X-Ray Diffractometer (XRD), Scanning Electron Microscopy (SEM), Particle Size Analyzer (PSA), and LCR Two Probe. Analysis of the XRD data were done using software X’Pert High Score Plus (HSP). The result of analysis shown that percentage of olivine fase and electric conductivity were the highest, there were 35% and 0.0769 S/cm made by calcination temperature 700°C. Particle of material cathode LFP was sized micron in scale 0.8 – 1.3μm showing by Particle Size Analyzer (PSA) test.

Key word : cathode, coprecipitation, LFP, olivine, solid state.
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