

51. Frequency Dependence Of Electrical And Dielectric Properties Of LiFeO₂ Cathode

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ABSTRACT

LiFeO₂ has been synthesized by hydrothermal method. The XRD spectrum exhibited predominant (200) orientation at $2\Theta = 43.63^\circ$ along with other characteristic orientations (110), (220), (311), (222) which is attributed to cubic rock-salt structure with Fm3m space group and the estimated lattice parameter is 4.174 Å. The impedance analysis has been carried out over a frequency range of 1 Hz – 1 MHz at various temperatures. The ionic conductivity of the sample is observed to vary from 2.96×10^{-5} S/m to 1.9×10^{-4} S/m by increasing the temperature from room temperature to 100 °C. The activation energy was found to be 0.39 eV. The electrical conductivity is observed to be increased with increasing temperature. The evolution of the complex permittivity as a function of frequency and temperature was investigated. Several important parameters such as activation energy, carrier concentration term, ionic mobility and diffusion coefficient have been calculated.

Keywords: Hydrothermal synthesis, LiFeO₂, Electrical and Dielectric Properties.