

Synthesis, Characterization and Impedance Analysis of Polypyrrole/La_{0.7}Ca_{0.3}MnO₃ Nanocomposites

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Abstract : Perovskite manganite La_{0.7}Ca_{0.3}MnO₃ was synthesized by Sol-gel method. Polymerization of pyrrole was carried by in-situ polymerization method. The composite of pyrrole (Py)/La_{0.7}Ca_{0.3}MnO₃ composite in the presence of oxidizing agent ammonium per sulphate to synthesize polypyrrole (PPy)/La_{0.7}Ca_{0.3}MnO₃ (LCM) composite was carried out by the same in-situ polymerization method. The PPy/LCM composites were synthesized with varying compositions like 10, 20, 30, 40, and 50 wt.% of LCM in Py. The surface morphologies of these composites were analyzed by using scanning electron microscope (SEM). The images show that LCM particles are embedded in PPy chain. The impedance measurement of PPy/LCM at different temperature ranges from 30 to 180 °C was studied using impedance analyzer. The study shows that impedance is frequency and temperature dependent and it is found to decrease with increase in frequency and temperature.

Keywords : polypyrrole, sol gel, impedance, composites

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