

# Low temperature molten salt synthesis of $Y_2Sn_2O_7$ anode material for lithium ion batteries

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## Abstract

For the first time, yttrium tin oxide ( $Y_2Sn_2O_7$ ) compound is prepared at low temperature (400 °C) with cubic pyrochlore structure via molten salt method using KOH as a flux for their electrochemical applications. The final product is reheated at three different temperatures of 600, 800 and 1000 °C for 6 h in air, are physically and chemically characterized by various techniques such as X-ray diffraction (XRD), scanning electron microscope (SEM) and electrochemical studies of galvanostatic cycling (GC), cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS). Galvanostatic cycling of  $Y_2Sn_2O_7$  compounds are carried out with three different current densities of 60, 100 and 250 mA g<sup>-1</sup> and the potential range of 0.005–1.0 V vs. Li. The EIS is carried out to study the electrode kinetics during discharge and charge at various voltages and corresponding variation of resistance and capacitance values are discussed.