

# Influence of heating temperature on structure, morphology and electrochemical performance of $\text{LiV}_3\text{O}_8$ cathode for lithium-ion batteries application

## Abstract

$\text{LiV}_3\text{O}_8$  layered structure was successfully synthesized by a conventional solid-state approach and subsequent heat-treated at 400, 450, 500 and 550 °C. The samples were characterized by XRD, SEM, TEM, BET. Electrochemical performance of  $\text{LiV}_3\text{O}_8$  was investigated by cyclic voltammetry (CV) and galvanostatic charge-discharge. The results showed that high purity of  $\text{LiV}_3\text{O}_8$  with layered structure was formed. The morphology of the samples were mixed between nanorods and nanosheets structure. For electrochemical performance, results showed that  $\text{LiV}_3\text{O}_8$  heat-treated at 500 °C performed a highest charge and discharge capacity of 212 and 172 mAh  $\text{g}^{-1}$ , respectively. From electrochemical performance results made them a good candidate for cathode material for lithium-ion batteries application.

## Keywords

Cathode materials; Li-ion batteries;  $\text{LiV}_3\text{O}_8$ ; Morphology; Electrochemical performance; Solid-state processing