

**SODIUM COPPER OXIDE CATHODE PRODUCTION VIA SOL-
GEL METHOD AND CHARACTERIZATION FOR SODIUM ION
BATTERIES**

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ABSTRACT

SODIUM COPPER OXIDE CATHODE PRODUCTION VIA SOL GEL METHOD AND CHARACTERIZATION FOR SODIUM ION BATTERY

Sodium Copper Oxide (NaCuO_x) cathode material in a sodium-ion battery was synthesized by using sol-gel method assisted by Polyvinyl Alcohol (PVA). Its physical characterization was being analyzed by using Thermogravimetric Analysis (TGA), Attenuated Total Reflection-Fourier Transform Infrared (ATR-FTIR) spectroscopy, X-ray Diffraction (XRD) and Scanning Electron Microscopy with Energy Dispersive Electroscopy (SEM-EDS). After TGA analysis, the calcination temperature for the cathode material was determined. The temperature 800°C was chosen because the TGA curve becomes flat and no mass loss occurs at temperature 800°C . It indicates that the completion of reaction. In the ATR-FTIR analysis, the presence of metal oxide was confirmed by the peak 544.12cm^{-1} that indicating the M-O bond. Besides that, the peak at 1409.12 cm^{-1} and 876.81 cm^{-1} were corresponding to O-C-O and C-O-H bond respectively. The morphology of cathode material when observed under SEM-EDS, the particles were observed smooth surface and less agglomerated. Based on the XRD, the particles were observed as crystalline nature. In this study, the confirmation about electrochemical ability of synthesized NaCuO_x cathode material cannot be made because there is no electrochemical characterization was being performed.