

**SYNTHESIZED AND CHARACTERIZATION OF SODIUM  
COBALT OXIDE AS SODIUM ION CATHODE BATTERIES USING  
SOLID STATE METHOD**

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## ABSTRACT

### **SYNTHESIZED AND CHARACTERIZATION OF SODIUM COBALT OXIDE AS SODIUM ION CATHODE BATTERIES USING SOLID STATE METHOD**

The sodium cobalt oxide ( $\text{NaCoO}_2$ ) was synthesized by solid state method and analyzed by Thermogravimetric Analysis (TGA), ATR-Fourier Transform Infrared Spectroscopy (FTIR) and Field Emission Scanning Electron Microscope (FESEM) instrument. The characterization of the sodium cobalt oxide was done in order to know the structural morphology and physical and physical properties by using TGA, ATR-FTIR and FESEM. The TGA analysis reveals the sodium cobalt oxide was successfully synthesized at certain temperature since all the precursors and waters was evaporated. The ATR-FTIR analysis indicates the presence of metal oxide of Co-O peaks that appeared in the spectrum as well as nitrate ion peaks. The FESEM images show the surface morphology of sodium cobalt oxide was in hexagonal shaped crystal like with agglomerates particles that pose a flat and smooth surface. The diameters of these particles were in range of 427 nm to 652 nm.