**Annealing Optimization of Graphitized Hierarchical Co3O4@CuO@NiO for Supercapacitor Electrodes**

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**Abstract**

Recently, carbon derivatives addition in electrodes fabrication enhanced performance of newly fabricated electrodes applied in energy storages electrode materials.We formed a composite ofCo3O4@CuO@NiO and graphene oxide (GO) using hydrothermal technique. Annealed synthesized electrodes at different temperatures and examine various electrodes for supercapacitor application using three-electrode system. The Co3O4@CuO@NiO composite electrode annealed at 100 ºC demonstrates better performance compared to pristine and other temperatures. The results presented a specific capacitance of the Co3O4@CuO@NiO electrode annealed 100 ºC at 1312 F/g from cyclic voltammetry (CV) testing using 10.0 mV/s scan rate and 1258 F/g from galvanostatic charge discharge (GCD) at 1.0 A/g current density. Electrode annealed at 100 ºC also exhibited higher cycling stability of 92.5 % after 10, 000 cycles showing that annealing at 100 ºC improved electrodes properties.

**Key Words:** Graphene Oxide, Hydrothermal, Electrodes,Supercapacitor, Specific Capacitance.

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