

Nickel cobaltite sheets formed on nickel foam in ethanol for high performance supercapacitors

Nguyen Thi Toan, Van Quang Nguyen, Nhu Minh Tue Le,

심재진<sup>†</sup>

영남대학교

(jjshim@yu.ac.kr<sup>†</sup>)

Among various metal cobaltites (MCo<sub>2</sub>O<sub>4</sub>) nickel cobaltite (NiCo<sub>2</sub>O<sub>4</sub>) was chosen as it carries promising electrochemical properties for energy storage applications. During the hydrothermal process, porous NiCo<sub>2</sub>O<sub>4</sub> nanosheets adhered to the Ni foam in ethanol. As the electrode is binder-free, NiCo<sub>2</sub>O<sub>4</sub>@Ni has a high specific capacitance of 1752 F g<sup>-1</sup> at current density of 2 A g<sup>-1</sup>. The cyclic stability was 79% after 3000 charge/discharge cycles at high current densities. The powder density and energy density were 25.4 kW kg<sup>-1</sup> and 98.8 Wh kg<sup>-1</sup>, respectively, at a high discharge current density of 50 A g<sup>-1</sup>.

Keywords: NiCo<sub>2</sub>O<sub>4</sub>, specific capacitance, stability, supercapacitor, nanosheet