

In-situ bimetallic doping in carbon nanofibers via controlled electrospinning technique:
Electrochemical supercapacitor

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Carbon materials have received immense attentions due to their great physicochemical characteristics and most widely studied as an electrocatalyst in various energy storage, especially supercapacitor. In this work, we report the Nickel-Copper (NiCu) bimetallic doping into carbon nanofibers (CNFs) by electrospinning technique followed by the carbonization at 780°C. The prepared NiCu-CNFs were analyzed by morphological and structural characterizations to confirm the formation of NiCu-CNFs. The surface analysis revealed that the prepared NiCu-CNFs possess high specific surface area and good pore size with high pore volume. The electrochemical behavior of NiCu-CNFs was determined by making NiCu-CNFs electrode on Ni foam and tested in a neutral aqueous 1M Na₂SO₄ electrolyte via cyclic voltammetry (CV). A high specific capacitance of ~347 Fg⁻¹ with excellent stability after 1000 cycles was achieved by fabricated electrochemical supercapacitor with NiCu-CNFs electrode.