

## Electrode of supercapacitor using aligned carbon nanofibers coated with NiCo<sub>2</sub>O<sub>4</sub>

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Polyacrylonitrile (PAN) nanofibers were fabricated by electrospinning and aligned by controlling the rotary collector's speed. The aligned nanofibers were carbonized under nitrogen atmosphere to make carbon nanofibers. Aligned carbon nanofibers (ACNFs) have higher specific surface area and electrical conductivity than randomly oriented carbon nanofibers(RCNFs). Nickel-Cobalt oxide (NiCo<sub>2</sub>O<sub>4</sub>) nanostructure were prepared using electrodeposition on ACNFs to use as a supercapacitor electrode. Electrodeposition makes it possible to control the deposited material composition, and it is useful to regulate particle size. For these ACNFs coated with NiCo<sub>2</sub>O<sub>4</sub> have better capacitive properties than ANCFs which is coated with Co<sub>3</sub>O<sub>4</sub> and RCNFs which is deposited by NiCo<sub>2</sub>O<sub>4</sub> because the conductivity of ANCFs and NiCo<sub>2</sub>O<sub>4</sub> is higher than other electrodes. These results suggested that carbon nanofibers could be improved their electrochemically properties by using effects of aligned nanofibers and redox reaction of NiCo<sub>2</sub>O<sub>4</sub>. This study was supported by the National Research Foundation of Korea (grant no.: NRF-2015R1A4A1042434).