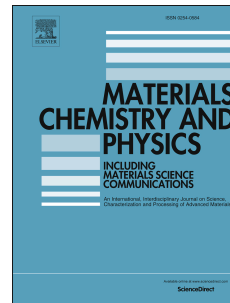


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## **Electroless decoration of cellulose paper with nickel nanoparticles: A hybrid carbon fiber for supercapacitors**

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**Abstract:** A facile scale-up process was used to fabricate a novel hybrid carbon fiber material decorated with nickel nanoparticles for use as a supercapacitor electrode. Biomass-derived soft wood was transformed into cellulose fibers via papermaking technology. The cellulose fibers were then decorated with nickel nanoparticles via electroless decoration. The hybrid carbon fiber material was obtained by subsequent carbonization at 700 °C. The hybrid carbon fiber material exhibited promising capacitive performance as an electrode, showing a high specific capacitance of 268 F/g in 6 M KOH at a current density of 0.2 A/g, and excellent electrochemical stability of 97% capacity retention after 2000 cycles because of the synergistic effects of EDLC (carbon with a high specific surface area) and pseudocapacitor (slightly redox reaction) features.

**Keywords:** cellulose paper; electroless decoration; carbon fiber; supercapacitors

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