

High-Performance Li Doped CuO/Reduced Graphene Oxide Flexible Supercapacitor Electrode

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Abstract : High-performance Li: CuO/reduced graphene oxide (RGO) flexible electrodes for supercapacitors were fabricated via a low-temperature and low-cost route. To increase energy density while maintaining high power density and long-term cyclability, Li was doped to increase the electrical conductivity of CuO particles between RGO flakes. Electrochemical measurements show that the electrical conductivity, specific capacitance, energy density, and rate capability were all enhanced by Li incorporation. The optimized Li:CuO/RGO electrodes show a high energy density of 179.9 Wh/kg and a power density of 900.0 W/kg at a current density of 1 A/g. Cyclic life tests show excellent stability over 10,000 cycles with a capacitance retention of 93.2%. Li doping improves the electrochemical performance of CuO, making CuO a promising pseudocapacitive material for fabricating low-cost excellent supercapacitors.

Keywords : supercapacitor, CuO, RGO, lithium

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