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An ultrahigh performance supercapacitors based on simultaneous redox in both electrode and electrolyte

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Abstract

A novel supercapacitor system with an ultrahigh electrochemical performance was prepared by applying a multi-walled carbon nanotubes (MWCNTs) - polyaniline (PANI) composite electrode and a redox potassium iodide (KI) electrolyte. The composite electrode possessed a good conductivity and a consecutive 3D conductive network. The amazing electrochemical performance came from the simultaneous redox reaction in both electrode and electrolyte. The maximum discharge specific capacitance was up to 4960 F/g (0.1 A/g) when the concentration of KI electrolyte was only 0.05 M