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Glucose-ethanol-assisted synthesis of amorphous CoO@C core-shell composites for electrochemical capacitors electrode

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ABSTRACT: Amorphous core-shell CoO@C and Mn₃O₄@C composites have been synthesized by documenting a simple glucose-ethanol-assisted approach and characterized by SEM, TEM, X-ray diffraction, energy dispersive X-ray spectroscopy and X-ray photoelectron spectroscopy. Electrochemical measurements are performed to examine the CoO@C composites, and the result shows that CoO@C structure has much higher capacitance, higher energy and power density and better cycling performance than that of C/CoO hybrids. This improvement can be attributed to the nature of core-shell structure, which promotes fast Faradaic charging and discharging reaction and also minimizes both the ionic and electronic transportation distances and therefore improves the resulting electrode kinetic performance.

Keywords: Core-shell; Cobalt oxide; Glucose; Composites; Cycling performance; Electrochemical.

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