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PII: S1385-8947(14)01696-9
DOI: http://dx.doi.org/10.1016/j.cej.2014.12.073
Reference: CEJ 13074

To appear in: *Chemical Engineering Journal*

Received Date: 2 October 2014
Revised Date: 11 December 2014
Accepted Date: 18 December 2014

Please cite this article as: K. Wang, M. Zheng, X. Shi, Z. Lin, H. Wang, Y. Lu, Glucose-ethanol-assisted synthesis of amorphous CoO@C core-shell composites for electrochemical capacitors electrode, *Chemical Engineering Journal* (2014), doi: http://dx.doi.org/10.1016/j.cej.2014.12.073

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 Mn_3O_4@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.