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Partly nitrogenized nickel oxide hollow spheres with multiple compositions for remarkable electrochemical performance

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Abstract

In order to improve the conductivity of NiO, a simple and effective strategy has been utilized. Here, we synthesized partly nitrogenized nickel oxide hollow spheres and used them as an electrode material of a supercapacitor. It was found that the prepared partly nitrogenized material possessed a mesoporous shell of multiple compositions consisting of NiO, Ni₂O₃, Ni₃N, and N-doped NiO, the latter partly substituted with nitrogen. The first-principles calculations were also employed to investigate the composite structure and the result demonstrated an improved electronic conductivity. The partly nitrogenized NiO spheres acted

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