

**Design and Synthesis of NiO Nanoflakes/Graphene Nanocomposite as High performance Electrodes of Pseudocapacitor**

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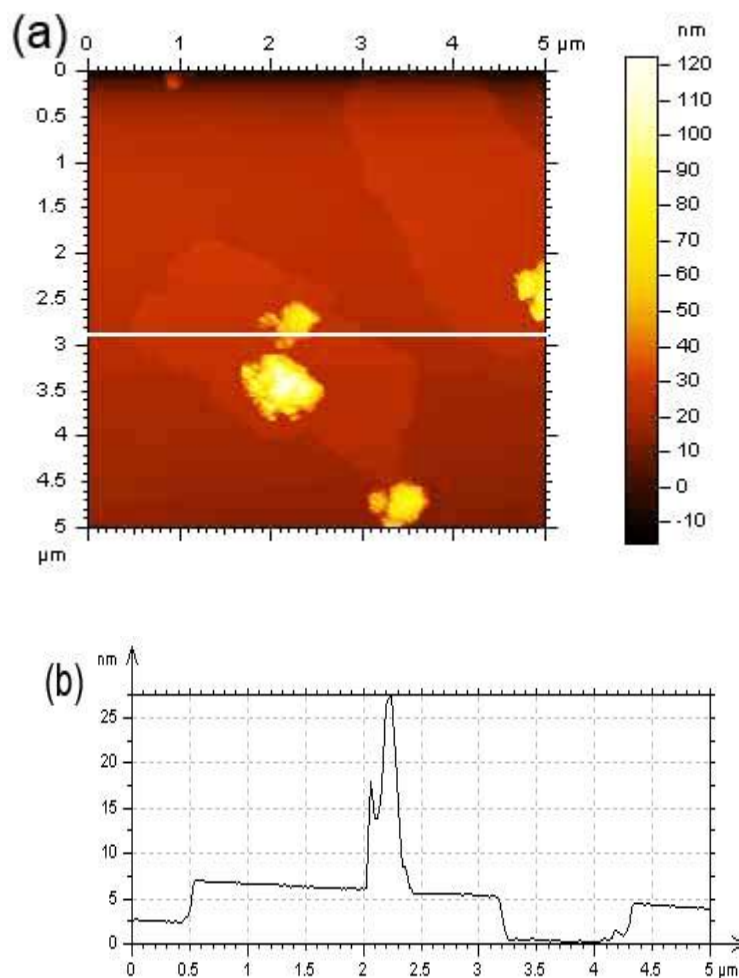
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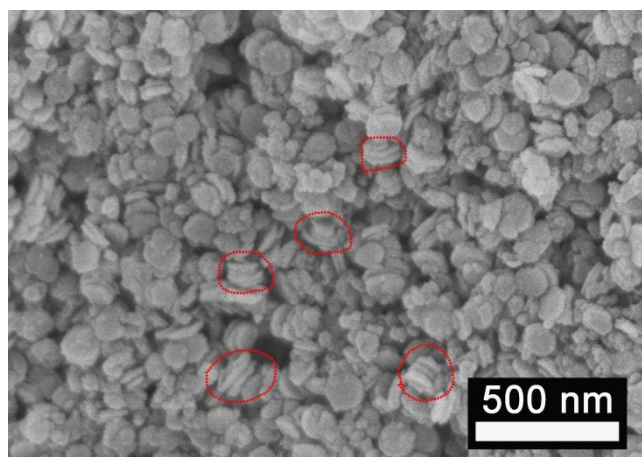
Active material	Electrolyte	Rate ability	Cycling performance
NiO/graphene <sup>1</sup>	6 M KOH	799 F/g (0.3 A/g) 460 F/g (5 A/g)	90% at current of 0.6 A/g after 1000 cycles
NiO flowers/ graphene <sup>2</sup>	2 M KOH	778.7 F/g (1.5 A/g) 120 F/g (3 A/g)	Nearly 100% at current of 1.5 A/g after 500 cycles
NiO with 3D structure <sup>3</sup>	2 M KOH	480 F/g (0.5 A/g) 252 F/g (5 A/g)	
Graphene/carbon sphere <sup>4</sup>	6 M KOH	198 F/g (0.175 A/g)	More than 95% at current of 0.175 A/g after 1000 cycles
NiO/graphene with layer by layer structure	6 M KOH	274 F/g (1 A/g) 240 F/g (5 A/g) 220 F/g (10 A/g)	100% at current of 5 A/g after 1500 cycles

**Table S1.** Comparison of some other reports about NiO or graphene or NiO/graphene composite as electrodes of supercapacitor.

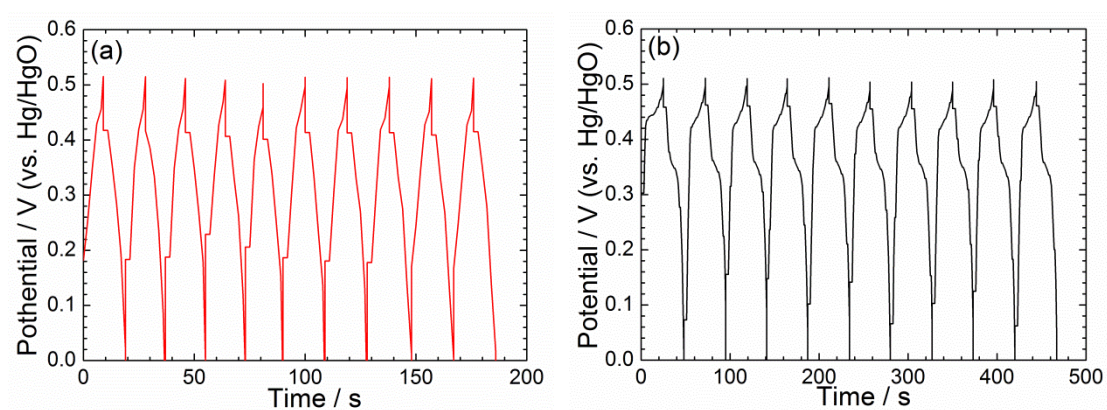


**Figure S1.** AFM image of NiO/G

AFM was conducted to further characterize NiO/G. The specimens were prepared by dropping well dispersed NiO/G suspension onto freshly cleaved mica. A typical AFM image of Figure S1 shows NiO nanoflakes anchored on the graphene. The cross-section contour shows that the height of the bare graphene is around 3 nm, which means the graphene is composed of several layers of sheet (below 10 layers). In comparison, the height of NiO nanoflakes is about 10–30 nm, which suggests that the NiO nanoflakes are partly overlapped on the graphene sheets.



**Figure S2.** The SEM image of bare NiO nanoflakes.



**Figure S3.** Galvanostatic charge/discharge curves of NiO (b) and NiO/G (c) at a current density of  $5 \text{ A g}^{-1}$  in 6 mol/L KOH aqueous solution.

## Reference

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