Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Structural investigation of Fe_3O_4/reduced graphene oxide with enhanced electrochemical performances towards lithium storage

Chaolun Liang,[ab] Teng Zhai,[a] Wang Wang,[a] Jian Chen,[b] Wenxia Zhao,[b] Xihong Lu,[*a] and Yexiang Tong[*a]

[a] *KLGHEI of Environment and Energy Chemistry, MOE of the Key Laboratory of Bioinorganic and Synthetic Chemistry, School of Chemistry and Chemical Engineering, Sun Yat-Sen University, Guangzhou 510275, People's Republic of China. E-mail: chedhx@mail.sysu.edu.cn; luxh6@mail.sysu.edu.cn; Fax: +86-20-84112245; Tel: +86-20-84110071*

[b] *Instrumental Analysis and Research Centre, Sun Yat-Sen University, Guangzhou 510275, People's Republic of China.*

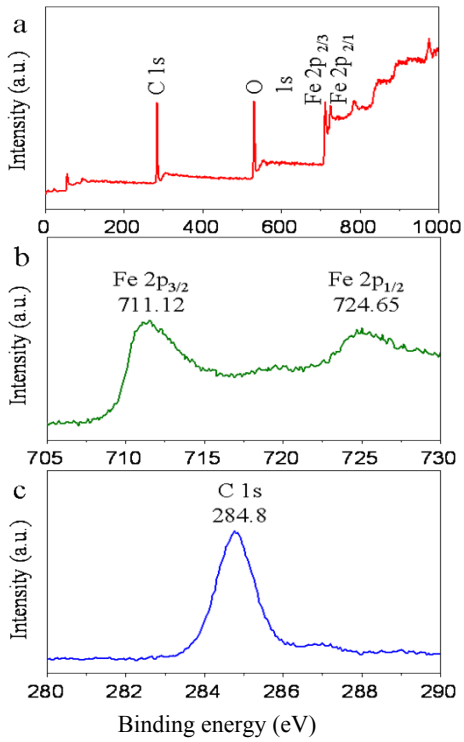

Fig. S1 (a) XPS survey spectrum, (b) Fe 2p core level XPS spectrum and C 1s core level XPS spectrum of Fe_3O_4/RGO composites.

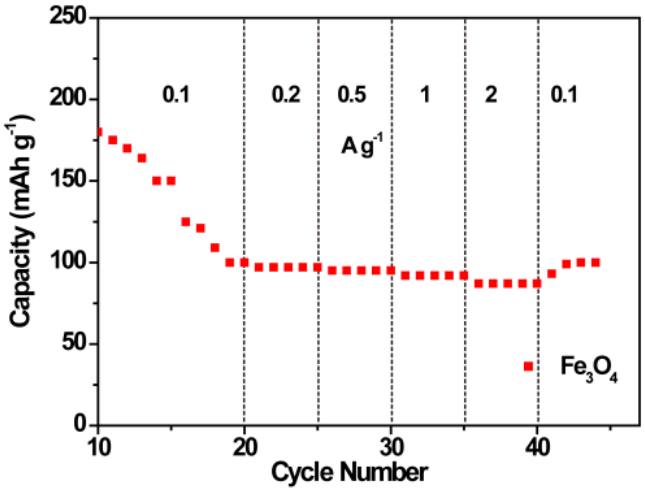

Fig. S2 Charge/discharge capacity of the Fe_3O_4/RGO anode at various rates for 40 cycles.

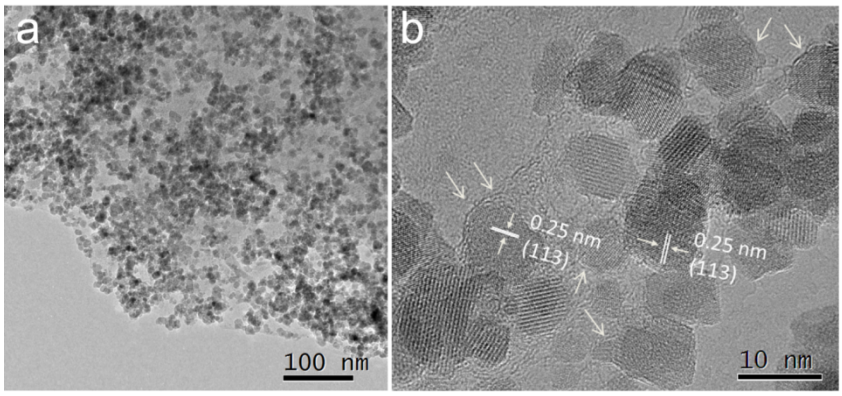

Fig. S3 (a) Typical TEM image and (b) HRTEM image of Fe_3O_4/RGO-2 composites with a mass loading of 0.81 mg cm^{-2}. RGO sheets are covered with a high density of Fe_3O_4 NPs, and some NPs have aggregated together. However, some isolated particles with active surfaces attached by carbon layers still can be observed in the HRTEM image (marked by white arrows), indicating that RGO still play the important role of protecting the highly active surfaces of the NPs.

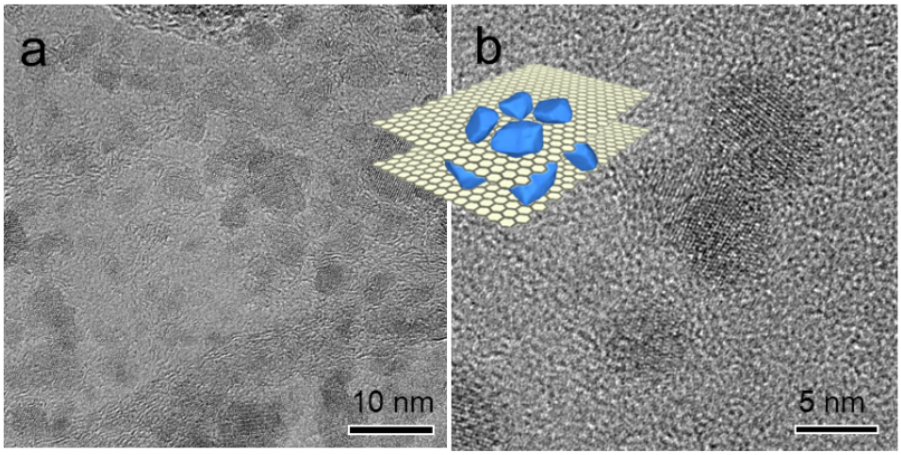

Fig. S4 Morphological features of the Fe_3O_4/RGO composites. (a) TEM image. (b) HRTEM image. The inset is a possible schematic illustrating the uniformly-dispersion of Fe_3O_4 NPs anchored on RGO.