# Supporting Information

## Self-Assembled 3D Flowerlike $\alpha$-$Fe_2O_3$ Hierarchical Nanostructures : Synthesis, Growth Mechanism, and their Application in Photocatalysis

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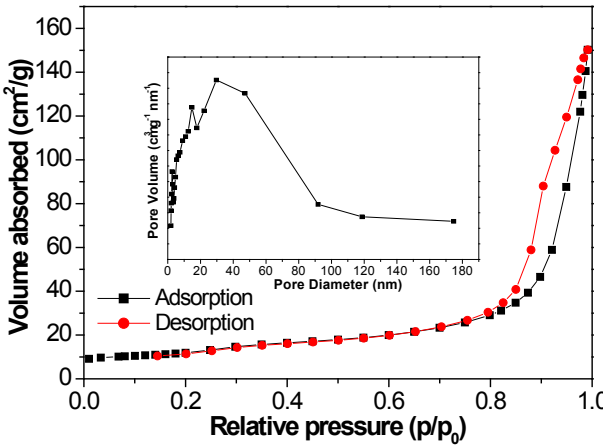


**Fig. SI 1** Typical $N_2$ gas adsorption-desorption isotherm of the porous flowerlike $\alpha$-$Fe_2O_3$ HNs at 200°C, urea/$Fe^{3+}$=5. Inset: the corresponding pore-size distribution.

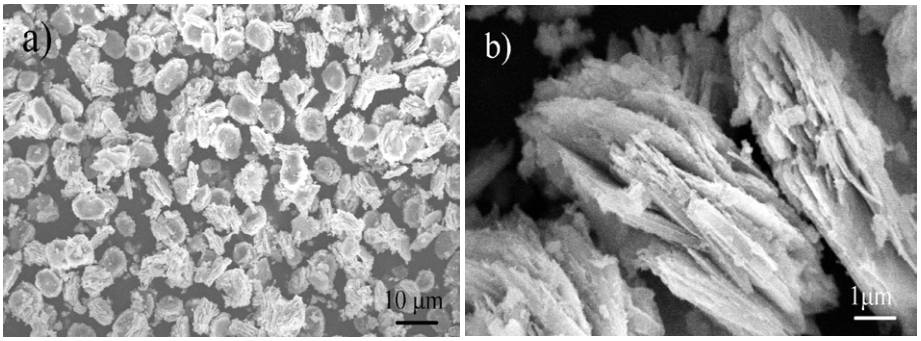


**Fig. SI 2** SEM image of the samples prepared in ethylene glycol at 200 °C, urea/$Fe^{3+}$=5.

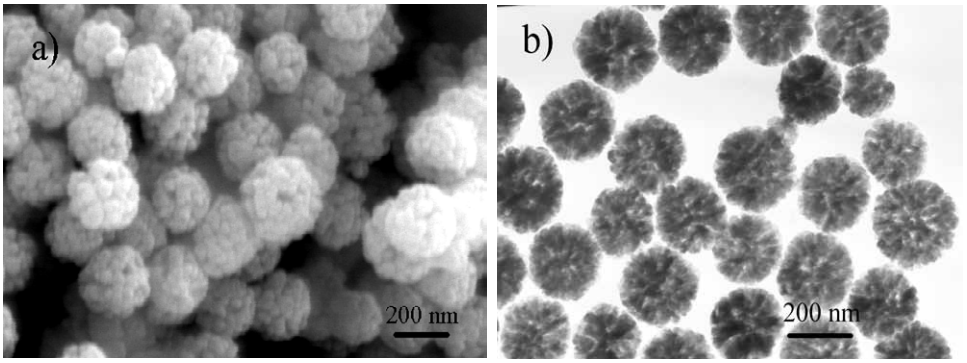


**Fig. SI 3** SEM (a) and TEM (b) images of the samples prepared in ethylene glycol at 200 $^{o}$C, and ethylenediamine (EDA) as mineralizer.[a]

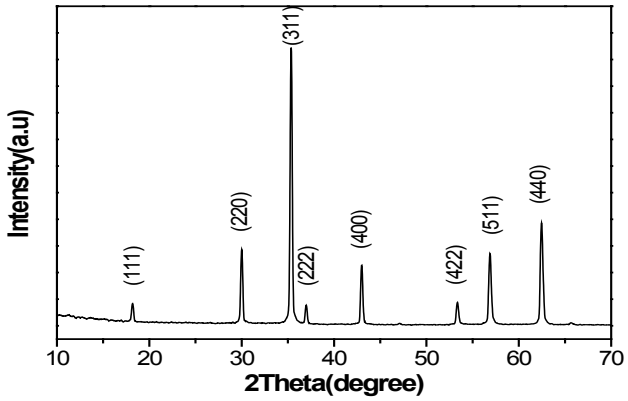


**Fig. SI 4** XRD pattern of of the samples prepared in ethylene glycol at 200 $^{o}$C, and ethylenediamine (EDA) as mineralizer. [a]

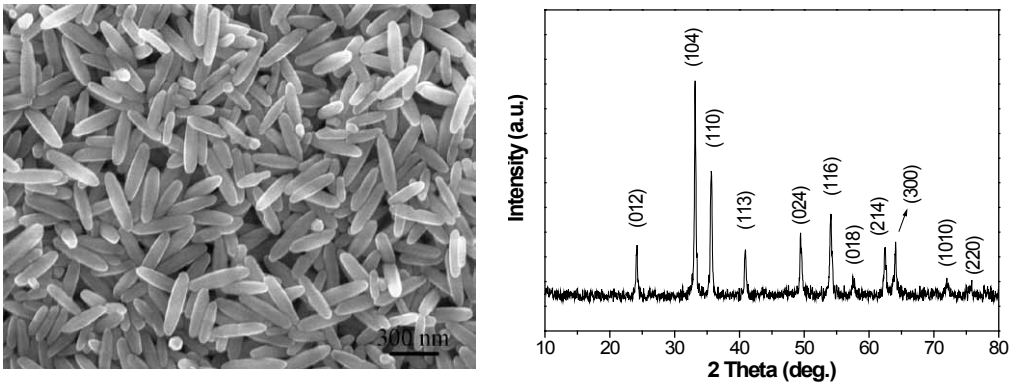


**Fig. SI-5** SEM image and XRD pattern of the samples prepared in aqueous solution at 180 $^{o}$C, and ethylenediamine (EDA) as mineralizer. [b]

## References

(a) L. P. Zhu, G. H. Liao, N. C. Bing, L. L. Wang and H. Y. Xie, *J. Solid State Chem*. 2011, 184, 2405.

(b)L. P. Zhu, G. H. Liao, N. C. Bing, X. Zhao and Y. Y. Gu, *Mater. Lett.* 2011, ***65***, 1287.