**Electronic Supplementary Information** 

## L-histidine-assisted template-free hydrothermal synthesis of $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> porous multi-shelled hollow spheres with enhanced lithium storage properties

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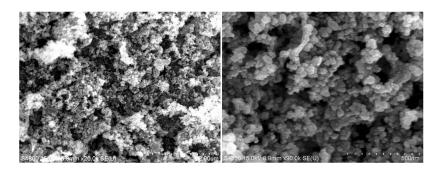


Fig.S1 SEM images of Fe<sub>2</sub>O<sub>3</sub> hydrothermal treatment of 180 °C for 12 h with the L-histidine completely dissolved in solution by

adding more deionized water. Only nanoparticles of Fe2O3 observed.

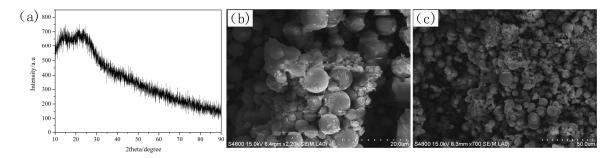


Fig.S2 XRD pattern of precursor (a) and SEM images of precursor (b), (c) the precursor of the  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> PMSHSs. The XRD results indicate that the precursor is amorphous. The SEM results show that the precursor was microspheres with relative smooth surface.

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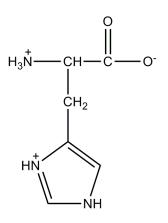


Fig.S3 structure of L-histidine with protons