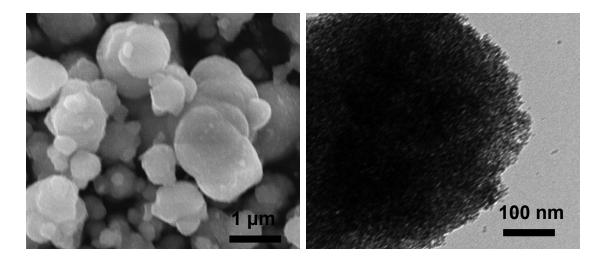
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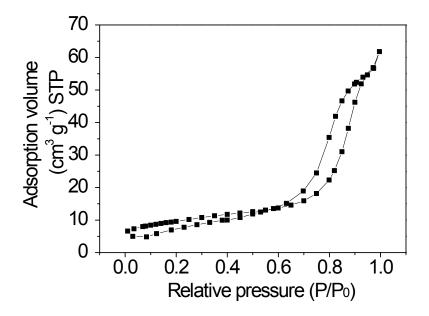
## **Supplementary Figures**

Supplementary Figure S1



(a) SEM of WS-  $Mn_3O_4$  nanoparticles TEM (b) TEM images of WS- $Mn_3O_4$  nanoparticles

Supplementary Figure S2



N<sub>2</sub> adsorption-desorption isotherms of synthesized WS-Mn<sub>3</sub>O<sub>4</sub>