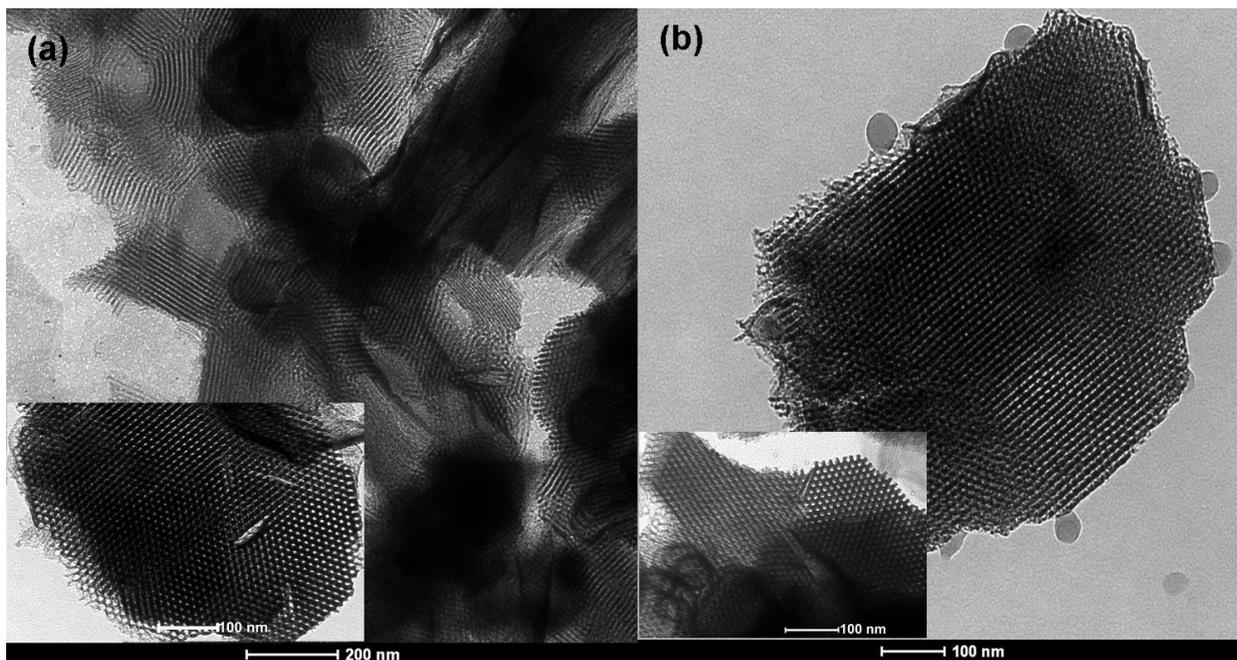


*Supporting information for:*

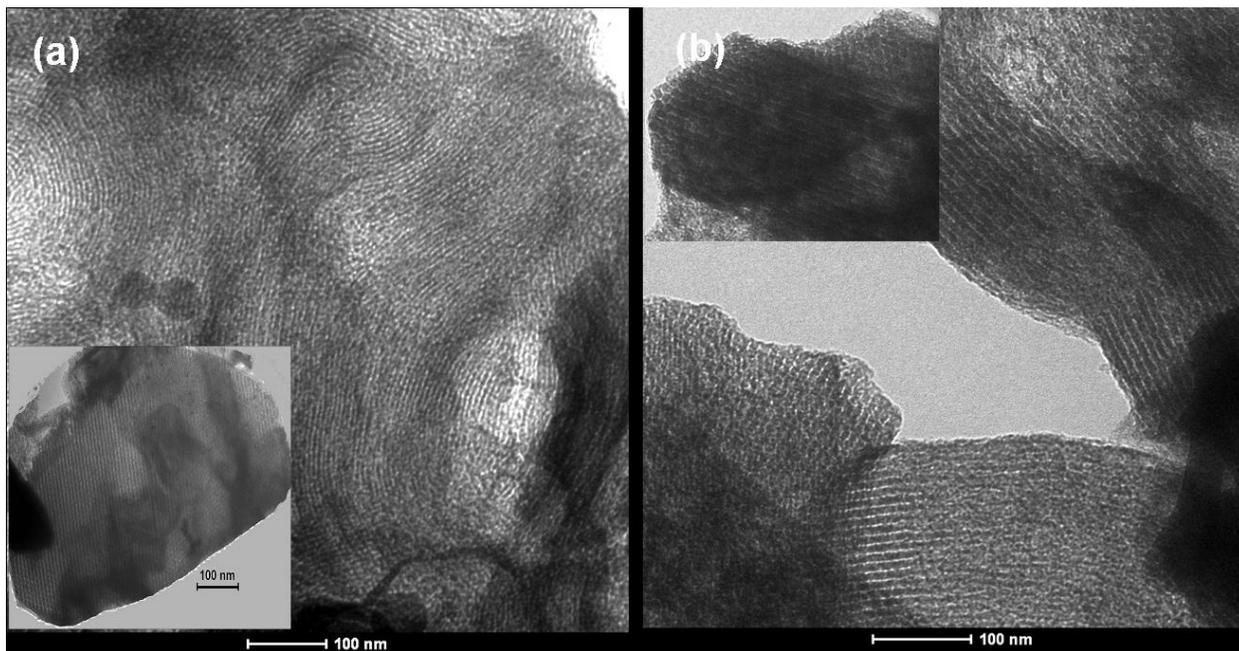
**High surface area mesoporous Co<sub>3</sub>O<sub>4</sub> from a direct soft template route**

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**Figure S1.** TEM images of SC-SBA-15 showing the highly ordered hexagonal pore structure with mesochannels aligned parallel to the short axis of the particles.



**Figure S2.** TEM images of CMK-3 showing the highly ordered hexagonal pore structure with mesochannels aligned parallel to the short axis of the particles as a negative replica of original template SC-SBA-15.

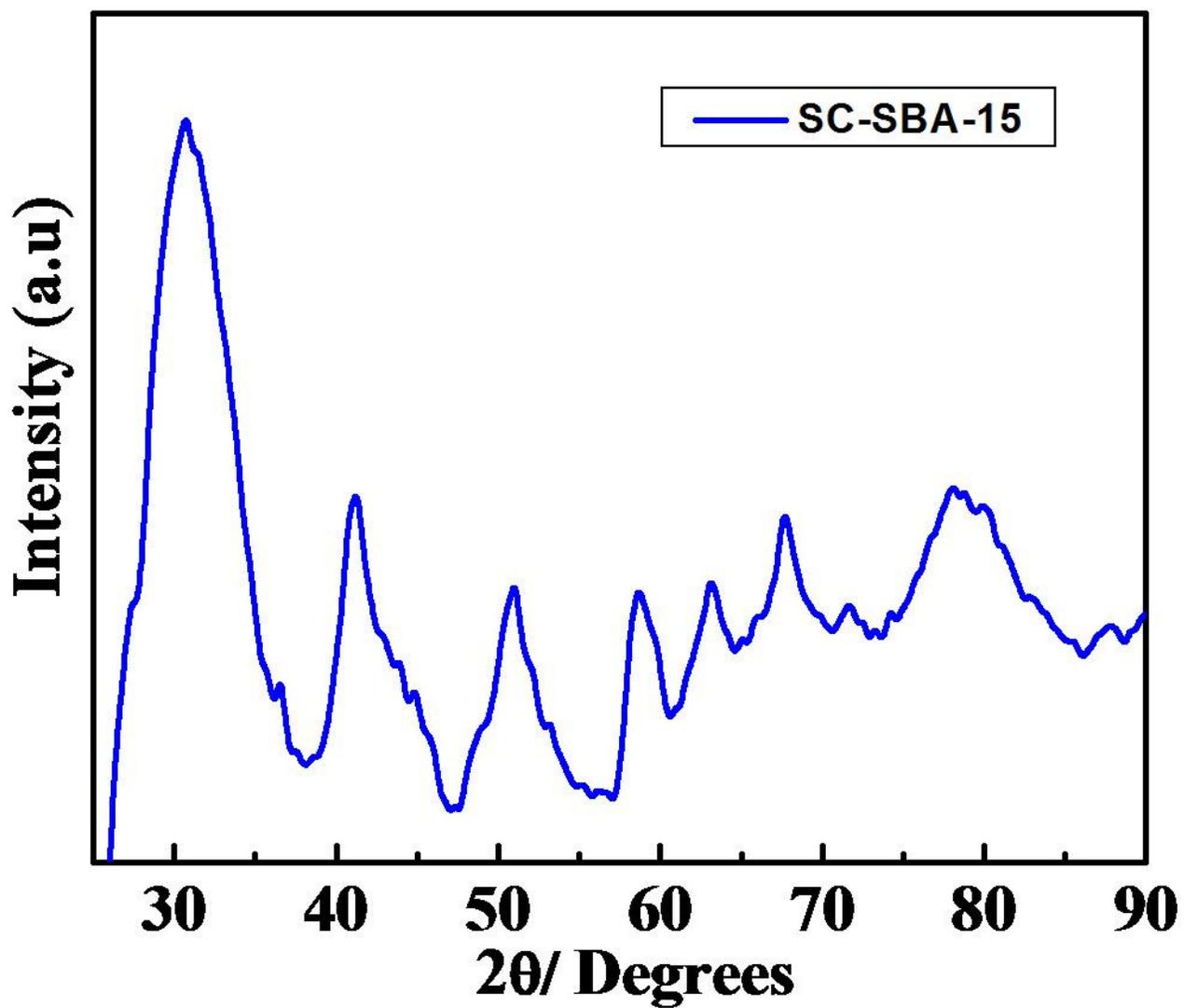


Figure S3. XRPD pattern for SC-SBA-15.

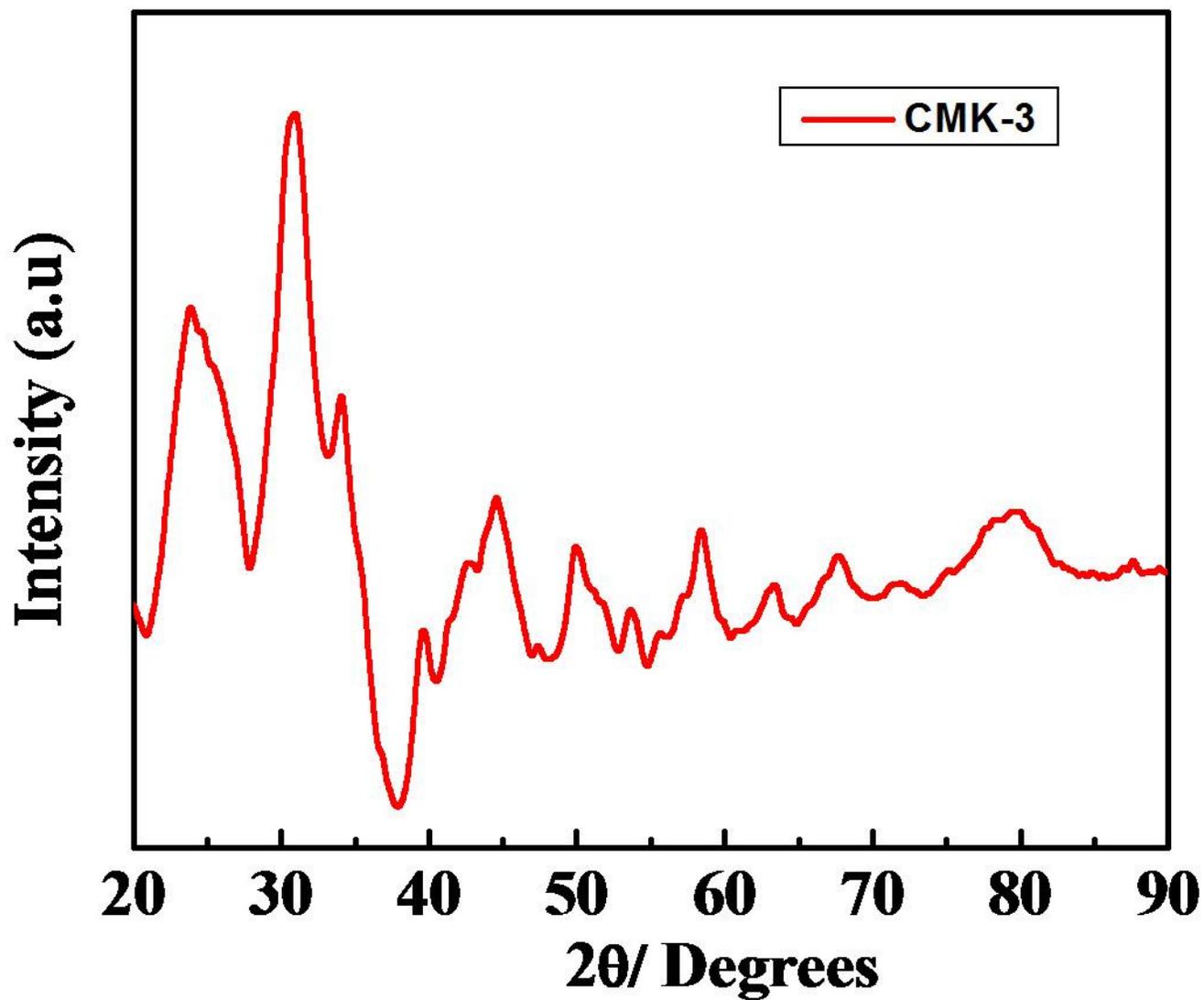


Figure S4. XRPD pattern for CMK-3.

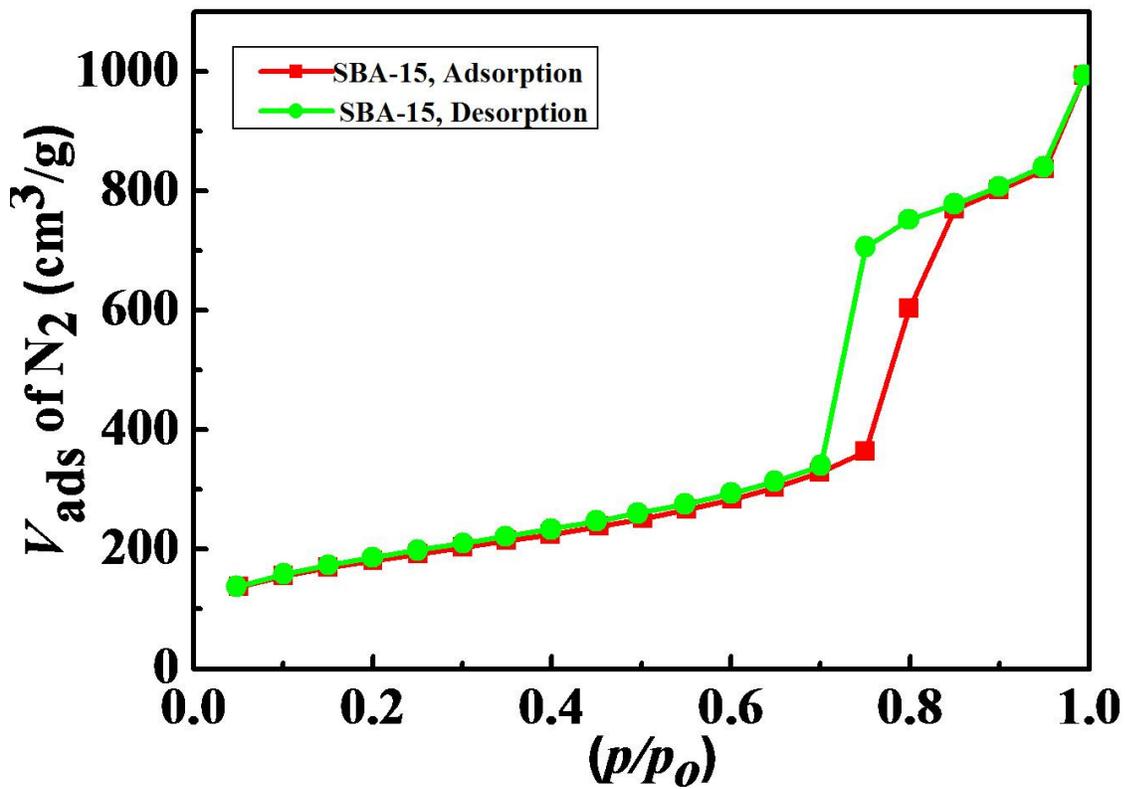
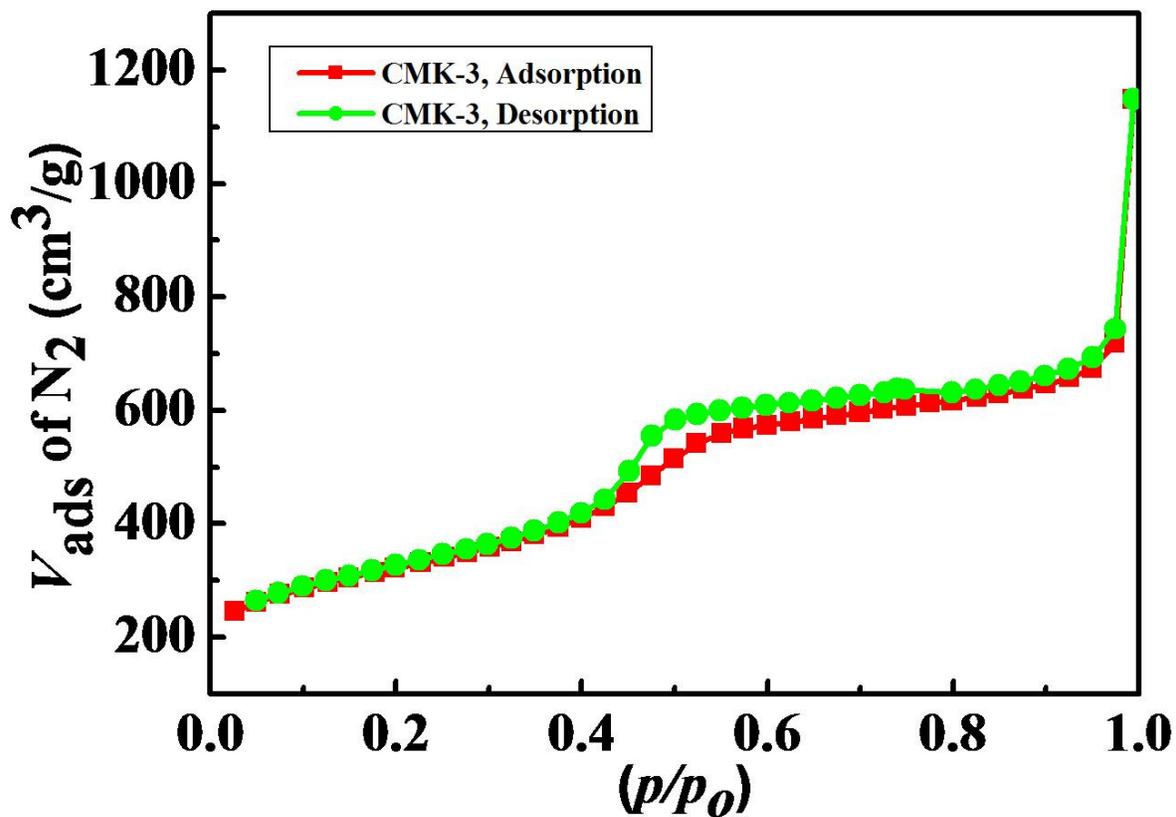


Figure S5. The adsorption, desorption isotherms of hard template SC-SBA-15.



**Figure S6.** The adsorption, desorption isotherms of hard template CMK-3.

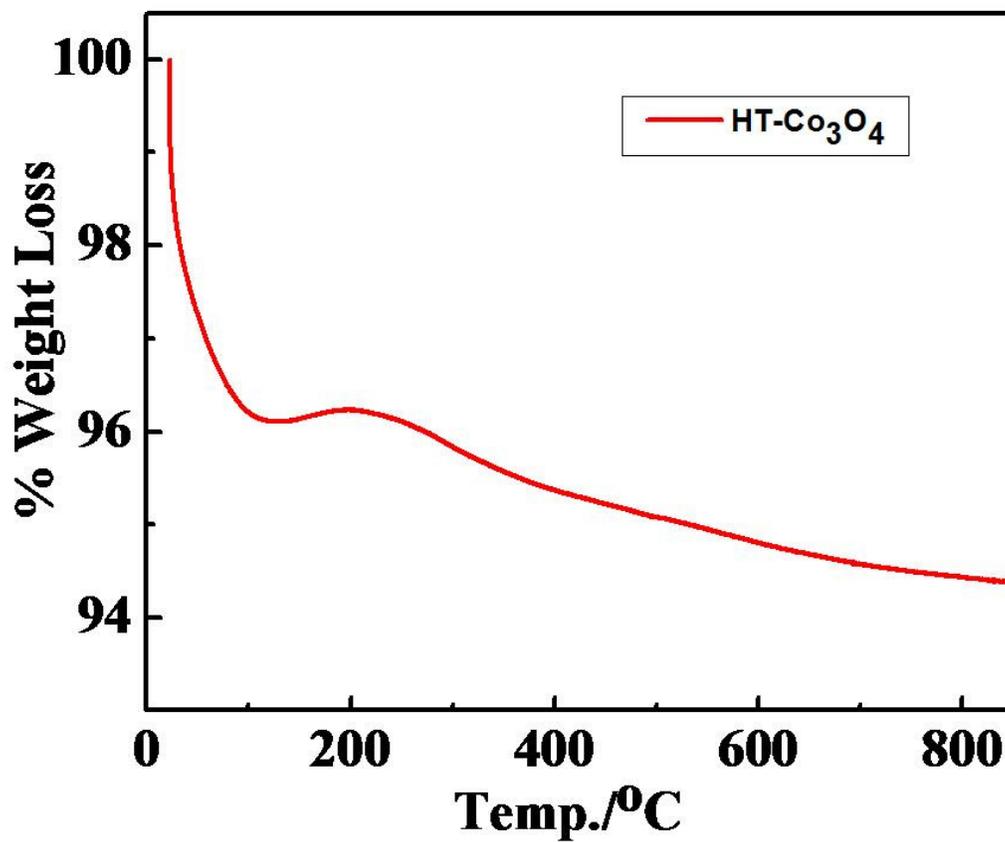
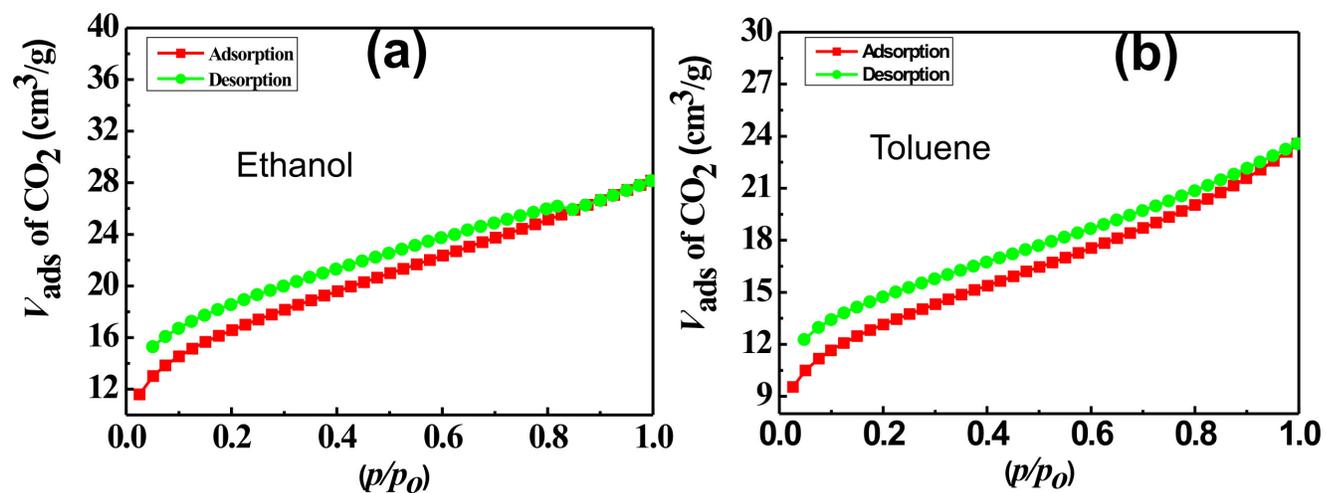
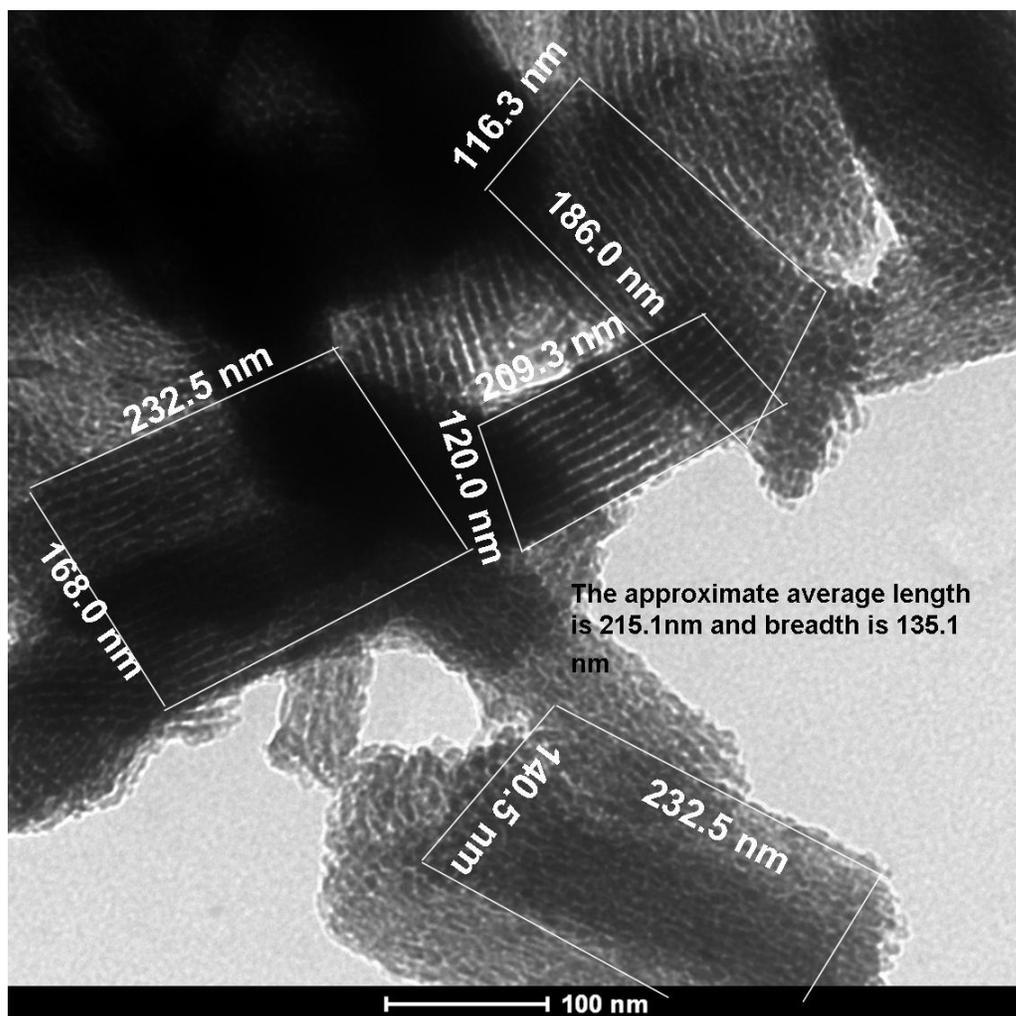


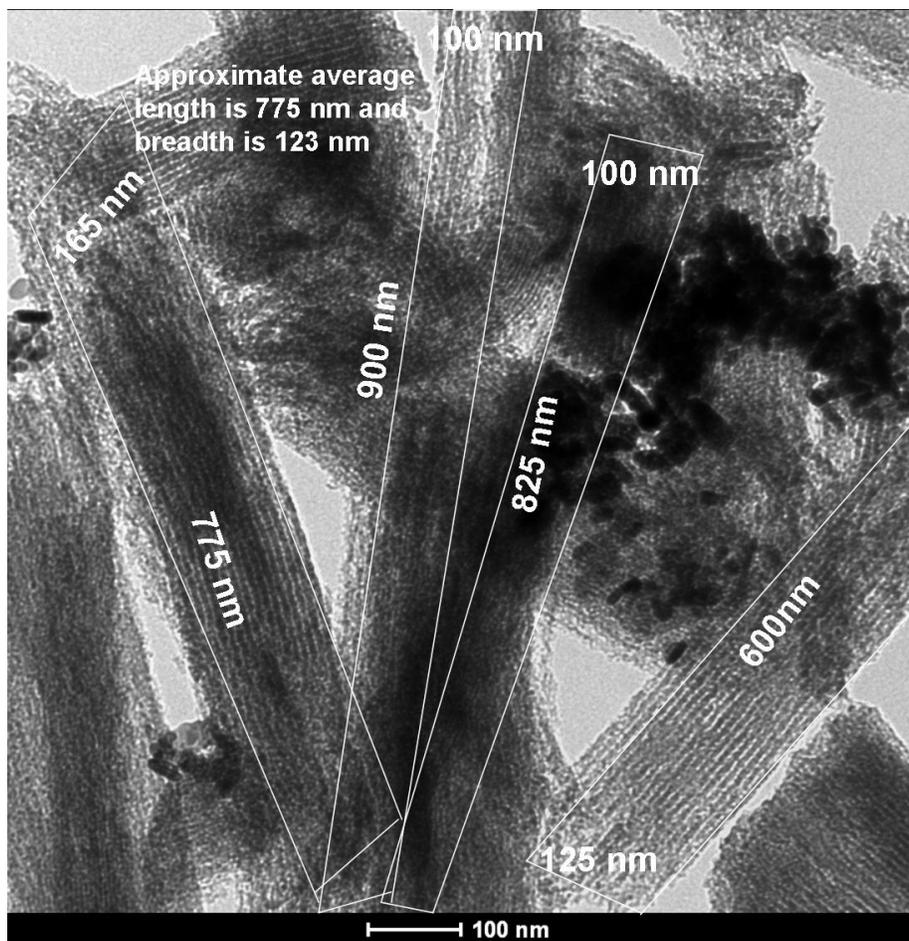
Figure S7. TGA curve of HT- CO<sub>3</sub>O<sub>4</sub>.



**Figure S8.** The adsorption, desorption isotherms of HT-  $\text{Co}_3\text{O}_4$  after refluxing with ethanol and toluene.



**Figure S9.** TEM images of HT-Co<sub>3</sub>O<sub>4</sub> showing the highly ordered hexagonal pore structure with mesochannels aligned parallel to the short axis (small length) of the particles as a negative replica of original template SC-SBA-15.



**Figure S10.** TEM images of ST-Co<sub>3</sub>O<sub>4</sub> showing the highly ordered hexagonal pore structure with mesochannels aligned parallel to the long axis similar to the normal SBA-15.