Supporting information

A triblock-copolymer-templating route to carbon spheres@SBA-15 large mesopore core-shell and hollow structures

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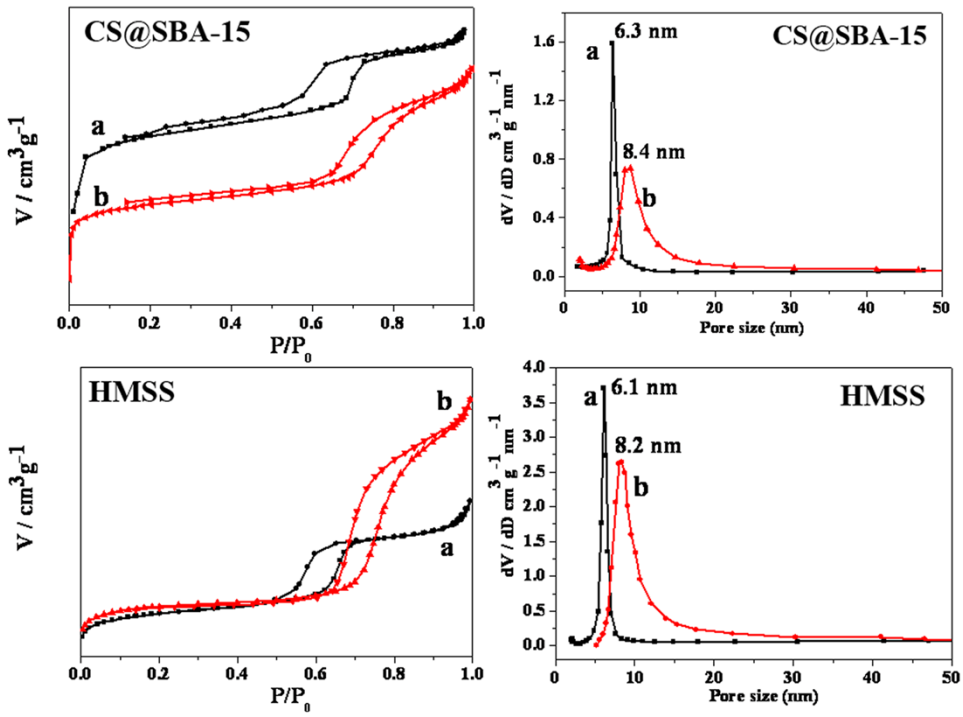

Fig. S1 N_2 sorption isotherm curves and pore size distribution plots of CS@SBA-15 and corresponding HMSS. (a) 100H; (b) 130H-$MgSO_4$. CS@SBA-15 100H prepared by using carbon spheres as core, Pluronic P123 as surfactant template, TEOS as silica source in HCl solution without addition of anhydrous magnesium sulfate with hydrothermal treatment at 100 °C for 24 h and calcination at 350 °C under nitrogen atmospheres; after calcined the sample at 700 °C under air atmospheres denoted as HMSS 100H. CS@SBA-15 130H-$MgSO_4$ prepared by using carbon spheres as core, Pluronic P123 as surfactant template, TEOS as silica source, anhydrous magnesium sulfate as the inorganic salt in HCl solution with hydrothermal treatment at 130 °C for 24 h and calcination at 350 °C under nitrogen atmospheres; after calcined the sample at 700 °C under air atmospheres denoted as HMSS 130H-$MgSO_4$.

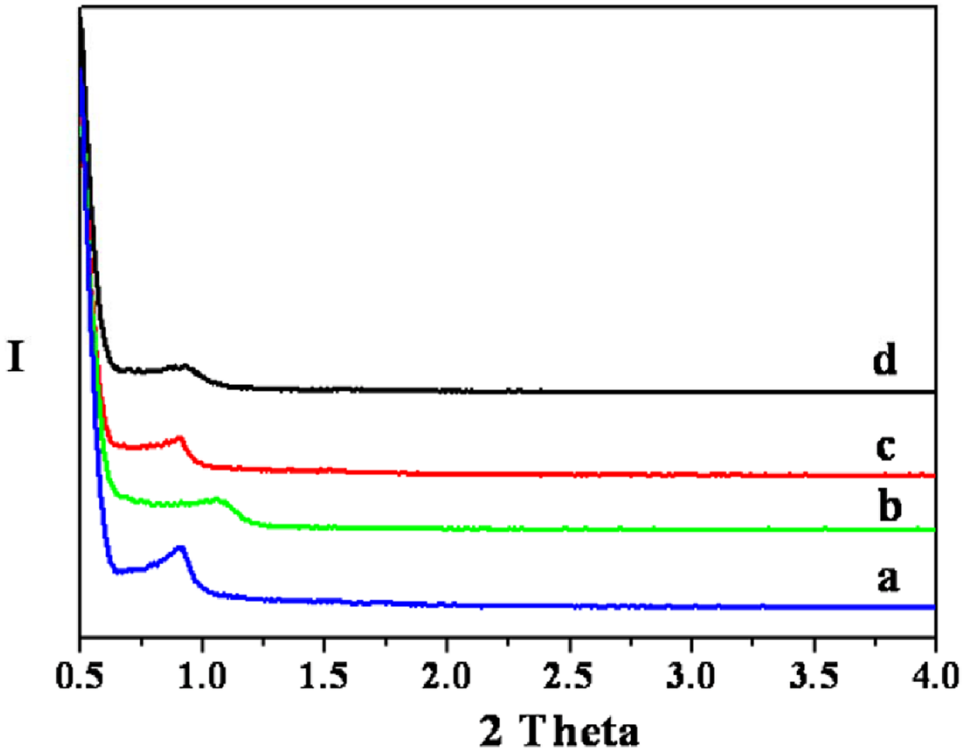

Fig. S2 XRD patterns of (a) CS@SBA-15 100H; (b) HMSS 100H; (c) CS@SBA-15 130H-$MgSO_4$ and (d) HMSS 130H-$MgSO_4$.

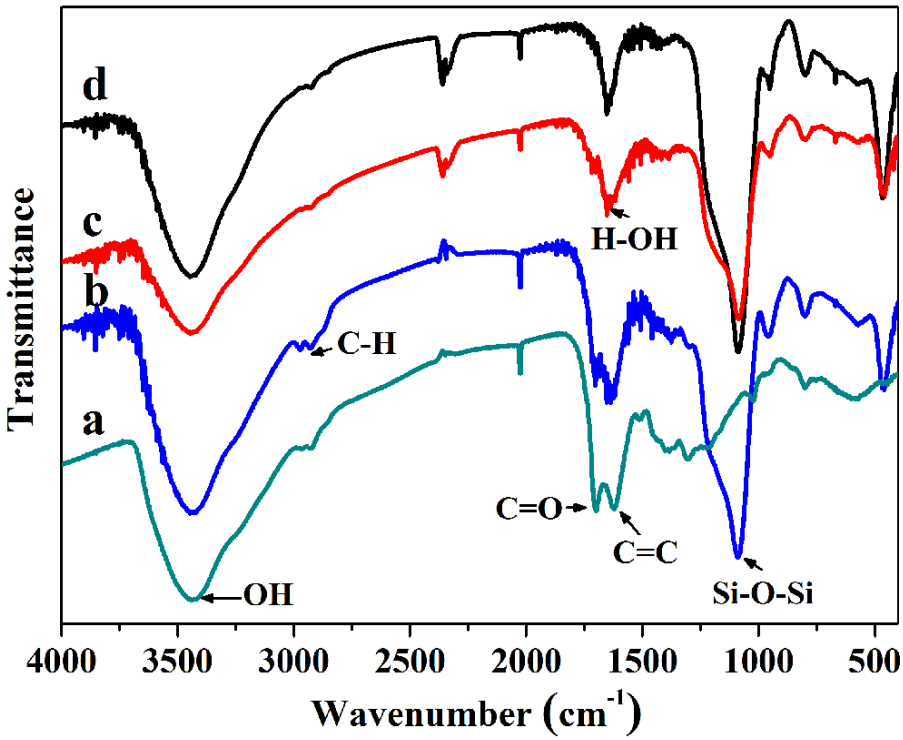

Fig. S3 FTIR spectra of (a) carbon spheres, (b) CS@SBA-15/P123, (c) CS@SBA-15, (d) HMSS.

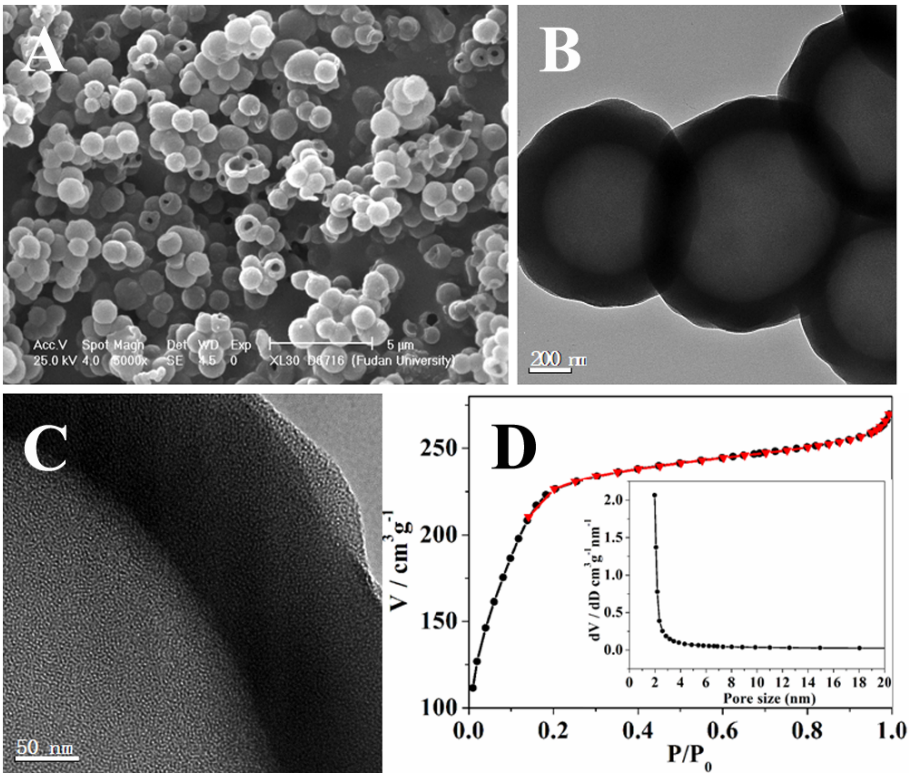

Fig. S4 The characterization of traditional hollow mesoporous silica spheres obtained by using carbon spheres as a core, hexadecyltrimethylammonium bromide (CTAB) as the surfactant, TEOS as the silica sources in ammonia/ethanol/water solution and calcination at 700 °C under air atmospheres. (A) SEM image, (B, C) TEM images, (D) N_2 sorption isotherm curves and pore size distribution plots.