Supplementary Material (ESI) for Journal of Materials Chemistry

Three-Dimensional Cubic (*Im*3*m*) Periodic Mesoporous Oraganosilicas with Benzene- and Thiophene-Bridging Groups

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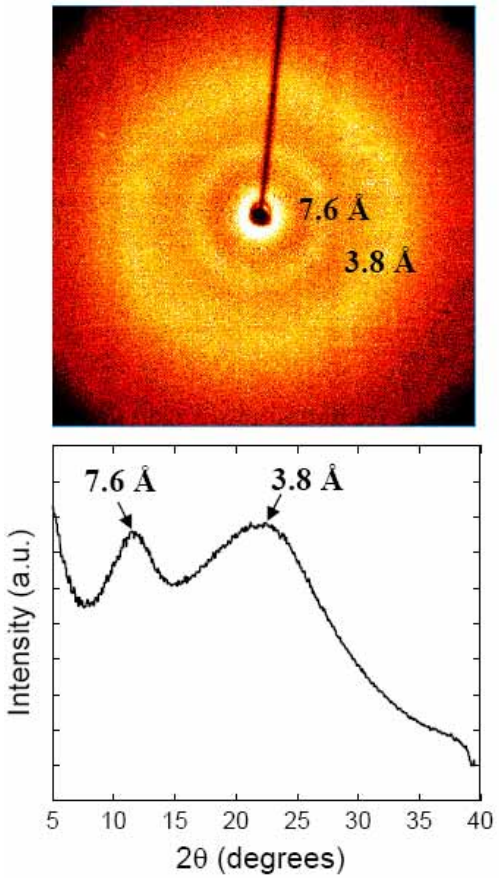

Fig. S1. WAXS image and data for cubic structured benzene-PMO prepared using F127 triblock copolymer under acidic conditions.

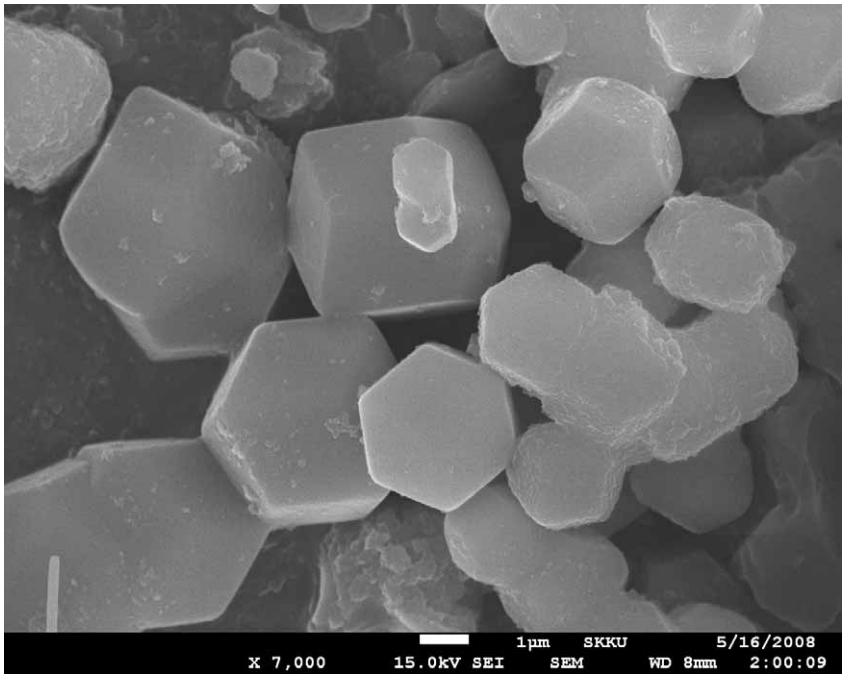

Fig. S2. SEM image for cubic structured benzene-PMO prepared using F127 triblock copolymer under acidic conditions.

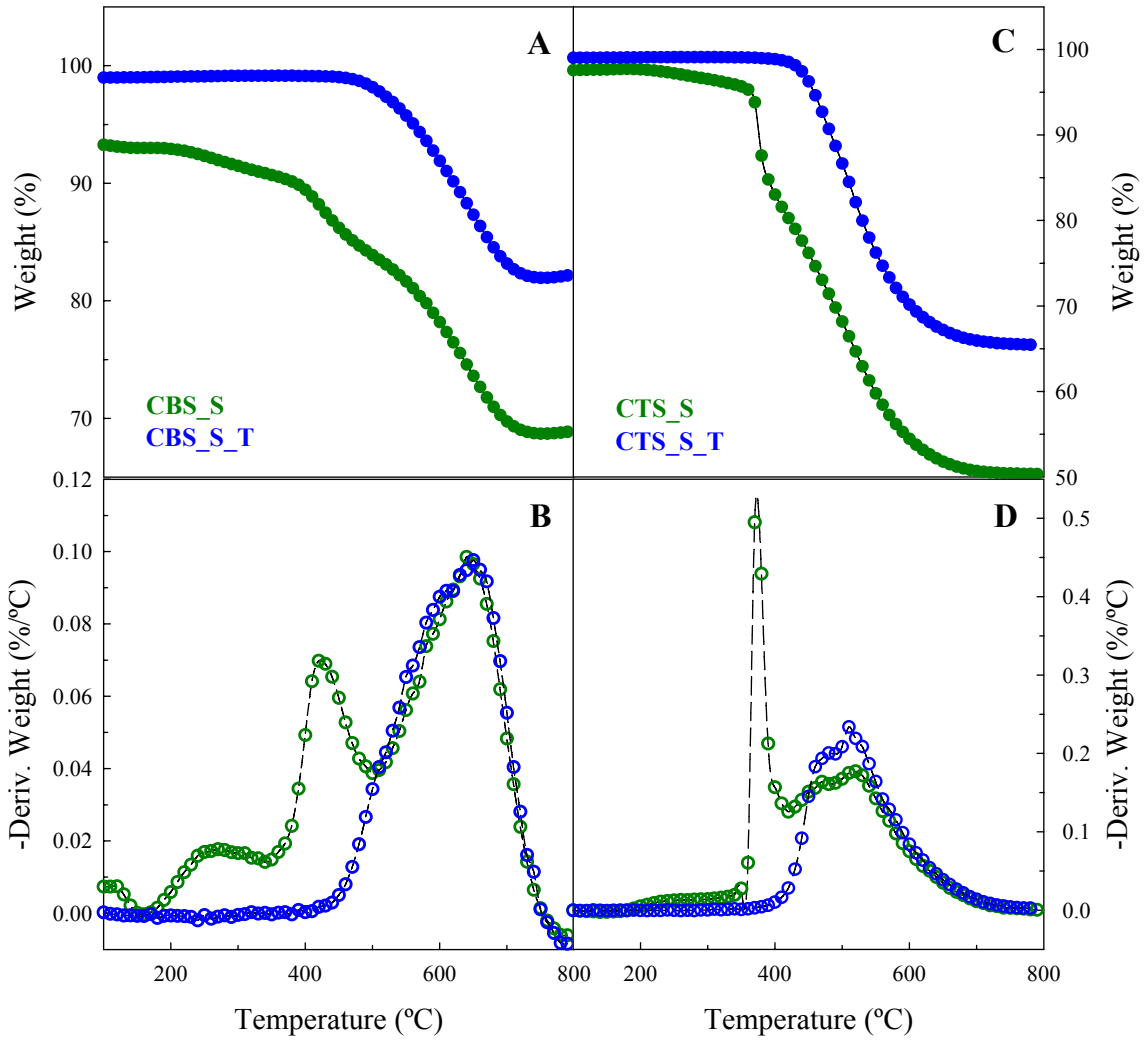

Fig. S3. Thermogravimetric profiles recorded in flowing nitrogen for the cubic benzene-PMO sample before (CBS_S) and after (CBS_S_T) calcination in nitrogen (panels A and B) and the thiophene-PMO sample before (CTS_S) and after (CTS_S_T) calcination in nitrogen (panels C and D). Green circles with line represent the TG and DTG profiles for the CBS_S and CTS_S samples, whereas the blue circles with line denote the corresponding TG and DTG curves for those samples subjected to an additional calcination in flowing nitrogen at 400 and 375 ^{o}C, respectively. As can be seen from these figures the DTG profiles for the CBS_S and CTS_S samples (extracted only; green circles) exhibit peaks before 400^{o}C reflecting the removal of polymeric template; these peaks disappear for the corresponding samples subjected to additional calcination in flowing nitrogen (blue circles). While the polymer residue is relatively small in the case of benzene-PMO samples, it is significant in the case of thiophene-PMO sample; in the later case an additional calcination is needed to make cubic mesoporous structure accessible for nitrogen adsorption.

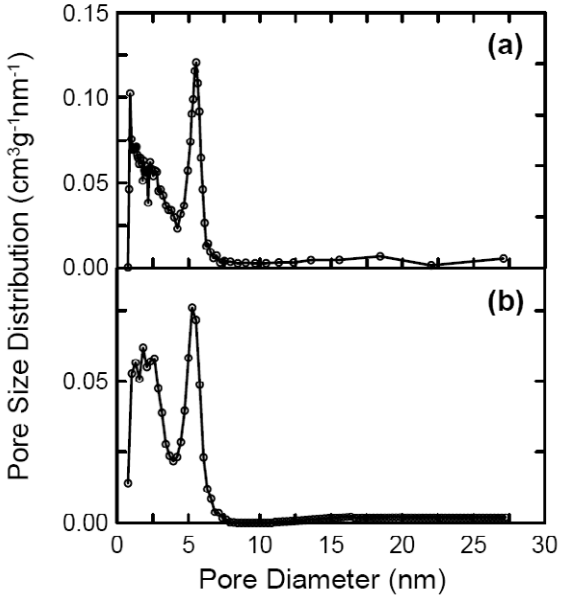

Fig. S4. Pore size distributions for cubic structured benzene-PMO (a) and thiophene-PMO (b) prepared using F127 triblock copolymer under acidic conditions.

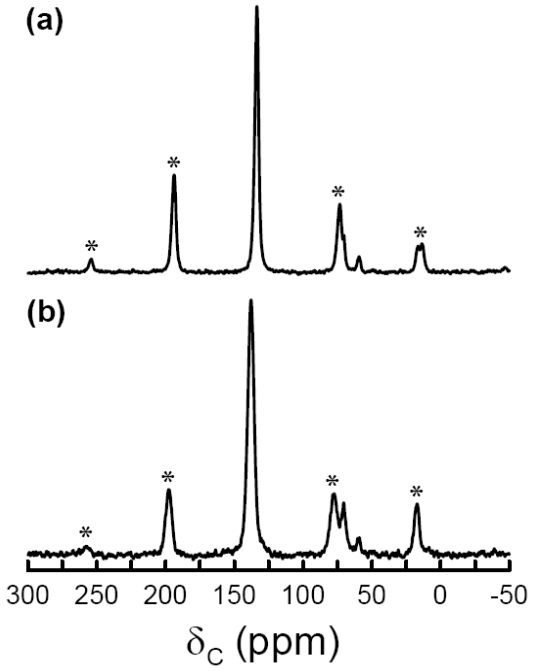

Fig. S5. Solid state ^{13}C CP-MAS NMR spectra for cubic structured benzene-PMO (a) and thiophene-PMO (b) prepared in this study. Samples were washed four times using a mixed solvent with ethanol and HCl as described in Experimental Section.

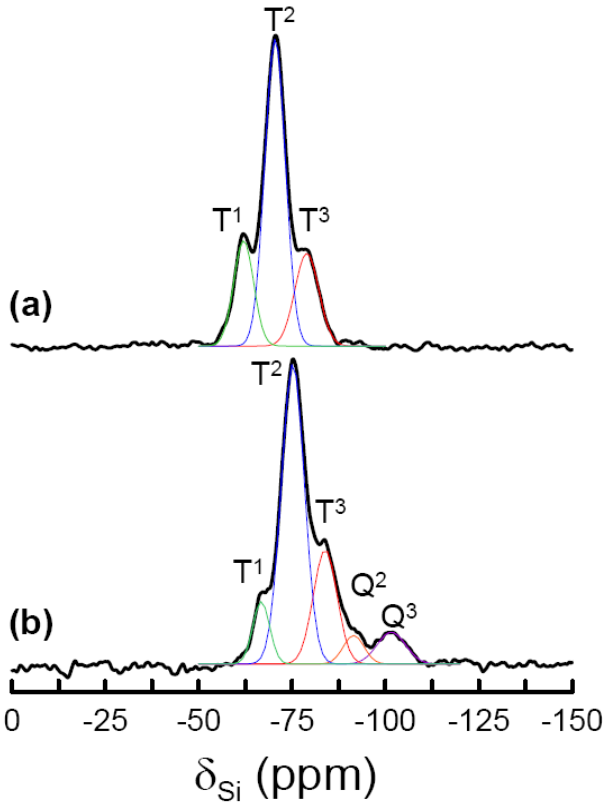

Fig. S6. Solid state ^{29}Si MAS NMR spectra for cubic benzene-PMO (CBS_S) (a) and thiophene-PMO (CTS_S) (b) prepared in this study.