

Synthesis of Ordered Porous Silica Particles Using Various Cationic Surfactants as Template under Acidic Conditions

김민호, 오성근*
한양대학교 화학공학과
(songoh@hanyang.ac.kr*)

In this research, mesostructured silica particles are synthesized in the presence of cationic surfactants as a structure directing agent under acidic conditions. The effective surfactant ion pair packing parameter (g value) is a useful molecular structure-directing index to characterize the geometry of the mesophase products, and phase transitions may be viewed as a variation of g in the liquid-crystal-like solid phase. Ordered porous structures with diameter ranging from 2 – 7nm have been obtained by varying the surfactant molecules such as Cetyltrimethylammonium bromide, Trimethyloctadecyl-ammonium bromide, Hexadecylpyridinium chloride, Benzalkonium chloride. Cationic surfactants and synthesis conditions can be chosen and controlled to obtain predicted silica-based meso-phase products. The synthesized mesostructure was confirmed by FE-SEM, TEM, small-angle X-ray scattering (SAXS) and N_2 adsorption were used to gain insight into the morphology and porosities of the materials.