



Synthesis of ordered mesoporous SBA-3 materials using silica gel as silica source



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ABSTRACT

Nanostructured materials have exceptional and highly attractive properties, including catalyst, adsorbent, separation media and chemo sensor. Technical advances in these fields require the development of ordered porous materials with controllable structures, systematic tailoring pore architecture and the synthesis of mesoporous materials using a more economical silica source. Ordered mesoporous silica SBA-3 material has been synthesized successfully using cetyltrimethylammonium bromide (CTAB) as a structure-directing agent, NaOH and inexpensive silica gel as a silica source without additives. We studied the influence of NaOH concentration on the structure and morphology of mesoporous silica SBA-3. This variation was defined as modulus  $L \propto [\text{NaOH}/\text{SiO}_2]$  ratio. The structural order of the samples was found to be greatly affected by  $L$  variations. The results suggest that, by controlling the  $L$  value (0.70–1), SBA-3 is obtained with appropriate physicochemical characteristics.

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