

Synthesis Route of Mesostuctured Material using the Self-Assembly of Surfactants and the Layered Sodium Silicate Minerals

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Layered silicic acids, which are easily derived from layered silicates such as ilerite ($\text{Na}_2\text{Si}_8\text{O}_{17} \cdot n\text{H}_2\text{O}$), magadiite ($\text{Na}_2\text{Si}_{14}\text{O}_{29} \cdot n\text{H}_2\text{O}$), kenyaite ($\text{Na}_2\text{Si}_{22}\text{O}_{45} \cdot n\text{H}_2\text{O}$) and kanemite ($\text{NaHSi}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$) by proton exchange, are found to be very useful hosts in the formation of pillared materials because of the presence of reactive silanol groups on their interlayer surfaces. Recently, the MCM-41/-48 transformation was performed by driving the transformation of layered sodium silicate minerals by altering surfactant packing within the micellar surfactant templates. However, many researches about meso-structured materials by the surfactant-templated sol-gel method have not yet been illustrated for the structure formation process.

In this study, we suggest about the synthesis route how to derive meso-structured materials from layered sodium silicate minerals using Surfactants containing a hydrophilic head group and a long hydrophobic tail group within the same molecule and will self-organize in such a way as to minimize contact between the incompatible ends.