

## Structure architecture of layered silicate material using template self-assembly

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### Abstract

Makatite, kanemite, octosilicate, magadiite and kenyaite form a series of sodium polysilicate hydrates with formulae,  $\text{Na}_2\text{O} \cdot (4-22)\text{SiO}_2 \cdot (5-10)\text{H}_2\text{O}$ . The layered silicates were largely been as a result of their ion-exchange, adsorption, intercalation and swelling properties. Kenyaite consisting of silicate sheets alternating with hydrated Na sheets is fruitfully exploited in developing porous materials with 3D structure such as ZSM-5 and ZSM-11 by intercalating structure directing agents(SDA), template, after template self-assembly.

The structure of kenyaite composed of  $\text{SiO}_4$  tetrahedra has SiOH groups in interlayer surface. The hydrogen bond between the SiOH groups and introduced SDA after template self-assembly is able to induce structure transformation under hydrothermal condition.

This study is to design new materials using the interlayer environments suitable for and specific to target molecules, for selective adsorbents and molecular sensors.