

EFFECT OF CRYSTALLIZATION TEMPERATURE ON CHARACTER OF MESOPOROUS-MESOSTRUCTURE TITANIUM SILICATE MATERIAL, Ti-MCM-48

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ABSTRACT

Effect of crystallization temperature on character of mesoporous-mesostructure titanium silicate, Ti-MCM-48 has been studied by hydrothermal method. The result of material synthesis were obtained from hydrolysis and condensation of tetraethyl orthosilicate (TEOS) as silicium source, $[Ti_8O_{12}(H_2O)_{24}]Cl_8 \cdot HCl \cdot 7H_2O$ as titan source, and a mixture of cetyltrimethylammonium bromide (CTAB)-NaOH in water solution as surfactant.

Crystallization process was done for 4 days at tempature 80, 90, 100, and 110 °C respectively. Then surfactant was removed by calcination at 550 °C for 5 hour in the muffle furnace. The solid product was characterized using X-Ray Diffraction (XRD), and was detected using IR Spectrophotometer (FTIR) to analyzed Ti(IV) replacing Si(VI) in the silicate framework.

The identification of structure showed that the optimal crystallization temperature to prepare mesoporous-mesostructure titanium silicate material (Ti-MCM-48) was done at 100 °C for 4 days.

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