

Hydrothermal stability of mesoporous silica modified with oleic acid

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Silicate mesoporous materials were synthesized with non-ionic surfactant and their surfaces were modified by oleic acid adsorption. Infrared spectrometer (IR), the change of pore size distribution by BJH method, scanning electron microscopy (SEM) and thermogravimetric analysis (TG) were used to investigate the structure of modified SiO₂ mesoporous material. The effect of heat-treatment at various temperature on oleic acid modified materials were also studied. Oleic acids on silica surfaces are bonded chemically and physically, and are capable of enduring to 180°C. The adsorbed oleic acid improved the hydrothermal stability of mesoporous silica and assist mesopore structure to grow more in hydrothermal treatment process by preventing the approach of water.