

The effect of PEG with various molecular weight in the PEG-silica composite materials

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In this study, PEG(poly ethylene glycol) with specific property is grafted onto the surface of silica particles for introducing a functionality. PEGMEIPTES is synthesized by reaction of a hydroxy group of poly ethylene glycol methyl ether(PEGME) with an excess amount of 3-Triethoxysilyl propyl isocyanate(IPTES). PEG-silica composites are prepared by introduction of PEGMEIPTES on the surface of silica particles.

Urethane group of PEGMEIPTES is confirmed using FT-IR. Morphology and surface characterization of composites with PEGME of molecular weight 350, 750, 2000 are studied using SEM, BET and XPS. As the molecular weight of PEGME is increased, the size of composites is increased and the surface area is decreased. Besides micropores on the surface of composites are removed by the addition of PEGMEIPTES to silica particles.