

Modification of silica nanoparticle surface group by two step sol-gel process

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Silica nanoparticles have the silanol group (-OH) on their surface and the groups dissociate the hydrogen ions when they are dispersed in water. Their dispersion properties are result from their surface. In this study, surfaces of silica were modified by silane compound and their properties were measured. Surface modified silica nanoparticles were prepared through two step sol-gel process. During first step silica nanoparticle having silanol group was synthesized and after the step, silane compound was added to turbid silica nanofluid. After the reaction, silica powder was obtained by filtration and drying at 105°C. Four silane compounds, MTES, VTMS, APTMS, MPTMS, were used as modifying agents. Their surface functional groups were confirmed by ¹³C solid state NMR and the dispersion property of silica suspensions was measured by zeta-potential meter.