Journal of Nanoparticle Research 2013 vol.15 N5

Synthesis of hybrid nano- and microsized particles on the base of colloid silica and thiacalix[4]arene derivatives

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Abstract

Two approaches to controlled synthesis of the organo-inorganic materials obtained by one- and two-stage surface modification of nanosized silica particles by p-tert-butyl thiacalix[4]arene derivatives have been developed and compared. The possibility of the synthesis of the mono- or low-disperse hybrid organo-inorganic particles with hydrodynamic diameter varying in the range of 23.92-137.1 nm depending on stereoisomer and reaction mixture dilution was shown via surface modification of the silica particles. The direct acylation of aminated silica leads to covalent macrocycle-silica hybrid clusters of micron size. The grafting reaction was confirmed by IR-, UV-spectroscopies, dynamic light scattering and thermal analysis. © 2013 Springer Science+Business Media Dordrecht.

http://dx.doi.org/10.1007/s11051-013-1617-2

Keywords

Colloid particles, Dynamic light scattering, Hybrid materials, Silica, Synthesis, Thiacalix[4]arenes