Synthesis and Characterization of PEGylated Nonporous/Mesoporous/Hollow Silica nanoparticles for bioapplication

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Silica nanoparticles have been widely used in biotechnology due to its biocompatible property and facile synthesis. In this work, nonporous silica nanoparticles have been compared with mesoporous and hollow silica nanoparticles, average diameter within 100nm. Monodisperse silica nanoparticles fabricated by Stober method were followed by PEGylation to enhance stability. For bioapplication, we compared the viability of silica nanoparticles with quantum dots doped silica nanoparticles in cell culture media solutions. Quasi-elastic light scattering (QELS) technique and transmission electronic microscopy (TEM) were used to observe the average diameter and morphology of silica nanoparticles, respectively.