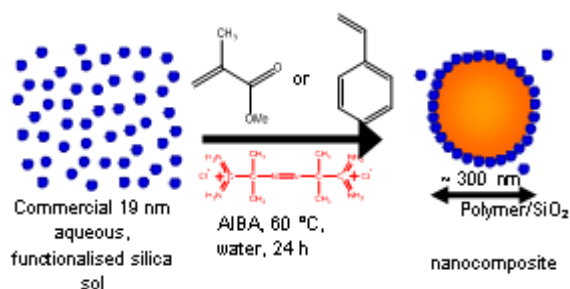


# Colloidal Polymer/Silica Nanocomposite Particles Prepared by Aqueous Emulsion Polymerisation

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Submicrometer-sized, polystyrene/silica nanocomposites were recently prepared via aqueous emulsion polymerisation. The use of a commercial, glycerol- modified 19 nm aqueous silica sol in combination with a cationic azo initiator is key to the successful formation of such nanocomposite particles [1,2]. As an extension of this approach, the preparation of the analogous poly(methyl methacrylate)/silica nanocomposite particles is described. It is demonstrated that systematic variation of the initial silica sol concentration affects the mean nanocomposite diameter and the silica sol incorporation efficiency. Transmission electron microscopy and dynamic light scattering are used to study the mechanism of formation of the polystyrene/silica nanocomposite particles by periodic sampling of the reaction solution. Solvent extraction is used to probe the nature of the interaction between the glycerol-modified silica sol and the polymer chains.



## **References:**

- [1] A. Schmid, J. Tonnar and S. P. Armes; *Advanced Materials*, **2008**, *20*, 3331.
- [2] A. Schmid, S. P. Armes, C. A. P. Leite and F. Galembeck; *Langmuir*, **2009**, *25*, 2486.