

Polymer and supramolecular nanocontainers based on carboxylate derivatives of resorcinarenes for binding of substrates and design of composites for catalysis

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Abstract

© 2020, Springer Science+Business Media LLC. The work describes the synthesis of supramolecular and polymer nanocontainers based on carboxylate resorcinarene derivatives. A comparative analysis of their inclusive characteristics toward hydrophilic and hydrophobic substrates was carried out. The obtained containers and silver nanoparticles were used to develop composite materials, and their catalytic activity in the reduction of 4-nitrophenol was examined. It was shown that polymer nanocontainers are more efficient in binding organic substrates, while the supramolecular containers are more suitable for the design of catalytically active composites. The reduction of 4-nitrophenol in the presence of nanocomposites based on supramolecular containers proceeds with a higher rate and does not show an induction period.

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Keywords

nanocomposite, nanocontainer, resorcinarene, silver nanoparticles

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