

Abstract Submitted
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Metal nanocrystals incorporated within pH-responsive microgel particles¹ MARIA VAMVAKAKI², D. PALIOURA, S.H. ANASTASIADIS³, Foundation for Research and Technology-Hellas, Greece, S.P. ARMES, University of Sheffield, UK — Cross-linked latexes of approximately 250 nm in diameter are synthesized by emulsion polymerization of 2-(diethylamino)ethyl methacrylate using a PEO-based macromonomer as the stabilizer at pH 9. These particles exhibit reversible swelling properties in water by adjusting the solution pH: at low pH they exist as swollen microgels due to protonation of the tertiary amine units whereas deswelling occurs above pH 7. The swollen microgels can be used as nanoreactors for the in situ synthesis of Pt nanoparticles. The effects of the method of Pt nanoparticle formation on the size of the microgel particles are studied by DLS. Polymer-metal interactions are investigated by UV-visible absorption spectroscopy, which confirms that the Pt salt is completely reduced to zero-valent Pt using NaBH₄. TEM and XRD verify the formation of nanometer-sized Pt nanocrystals within the microgels, which can be used as recoverable colloidal catalyst supports for various organic reactions.

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