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Co, Ni and Cu metal nanoparticle containing cationic p(MTMA) microgel composites as catalyst for H₂ generation and nitro compound reductions

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A microgel from [2-(Methacryloyloxy)ethyl]trimethylammonium chloride ([MTMA]Cl) as p(MTMA) was synthesized by inverse suspension polymerization technique and used as template for *in situ* Co, Ni, and Cu metal nanoparticles preparation. The corresponding metal salts were loaded into p(MTMA) microgels from their corresponding metal salt solution in ethanol, then these metal salt loaded p(MTMA) microgels were treated with NaBH₄ in order to obtain p(MTMA)-M (M: Co, Ni, and Cu) composites. The characterizations of p(MTMA) microgels were carried out via FT-IR, TGA, SEM, optical microscope, and zeta potential measurements. Finally, the prepared p(MTMA)-M composites were used as catalyst in hydrogen generation from the hydrolysis of NaBH₄ and in the reduction of nitro compounds. There are various parameters affecting the catalytic performances of p(MTMA)-M in H₂ production from the hydrolysis reaction such as, the type of metal nanoparticles, their amounts and reaction temperature were investigated. Also, aromatic nitro compound such as 4-nitrophenol (4-NP), 2-nitrophenol (2-NP) reductions by p(MTMA)-M composites were investigated.

Biography

Omer F Ozturk has completed his PhD from Hacettepe University, Turkey. He did his Post-doctoral studies from Florida University, USA. He has published more than 19 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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