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The use of poly (tris(2-aminoethyl)amine-co-glycerol diglycidyl ether microgel as template for Co, Ni nanoparticles and their use as catalyst for H, production from NaBH₄ hydrolysis

Nurettin Sahiner¹, Sultan Butun¹ and Mehtap Sahiner² ¹Canakkale Onsekiz Mart University, Turkey ²Ege University, Izmir, Turkey

Tris (2-aminoethyl) amine-co-glycerol diglycidyl ether, p(TAEA-co-GDE), microgel was synthesized from tris(2-aminoethyl)amine (TAEA) and glycerol diglycidyl ether (GDE) in one step via microemulsion polymerization methods. The prepared p (TAEA-co-GDE) microgel was used as template for *in situ* Co and Ni nanoparticle preparation within the microgel matrix by loading the corresponding metal ions from aqueous solutions. Then, these metal ions loaded p (TAEA-co-GDE) were treated with NaBH₄ to prepare metal nanoparticle containing p (TAEA-co-GDE)-M (M: Co, Ni) composite system. The prepared microgel composite were used as effective catalyst in the hydrolysis of NaBH₄ for H₂ generation. The H₂ production reaction kinetics were investigated under different reaction conditions and various parameters such as the initial NaBH₄ concentration, temperature, the catalyst amounts and the types were evaluated. The activation energies for the hydrolysis of NaBH₄ were calculated.

Biography

Nurettin Sahiner has completed his PhD in 2005 from Tulane University and did Postdoctoral studies at University of Delaware in Materials Science and Engineering, and at Tulane University School of Medicine in Biochemistry. He is the Director of Nanoscience and Technology Research and Application Center. He has published more than 150 papers in reputed journals and has been serving as an Editorial Board Member for journals.

sahiner71@gmail.com

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