

Nanohybride Porphyrin and Silver as an Efficient Catalyst for Oxidation of Alcohols by Tetrabutylammonium Peroxomonosulfate

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Abstract : A stable suspension of nanocomposite simple manganese(III) meso-tetraphenylporphyrin nanoaggregates and Ag was prepared by a host-guest procedure, in which ethanol and water are used as 'green' solvents. The oxidation of alcohols by tetrabutylammonium Peroxomonosulfate (TP) were efficiently enhanced with excellent selectivity under the influence of simple Mn(TPP)OAc (TPP = meso-tetraphenylporphyrin) nanoparticles. Enhanced stabilities and activities were achieved with nanostructured Mn catalysts compared to those of the individual counterparts in solution according to turnover numbers and UV/Vis studies. The title nanocatalyst facilitates a greener reaction because the reaction solvent is water and TP is safe to use. The efficiency of the oxidation system depends critically upon the steric hindrances and electronic structures of both nitrogen donor ligand and porphyrin nanoparticles.

Keywords : oxidation, nanoaggregates, porphyrinoids, silver

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