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Dioxomolybdenum (VI) Schiff Base Complex Supported on Magnetic Nanoparticles as a Green Nanocatalysis in Epoxidation of Olefins

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Abstract : Fe3O4 nanoparticles were prepared by the co-precipitation method and silica was then coated on the magnetic nanoparticles followed by modification with (3-aminopropyl) trimethoxysilane. Then, dioxomolybdenum(VI) Schiff base complex of N,N′-bis(5-chloromethyl-salicylidine)-1,2-phenylenediamine) was immobilized on the surface of magnetic nanoparticles as a heterogeneous catalyst. The catalyst was identified by scanning electron microscopy (SEM) and vibrating sample magnetometer (VSM), X-ray diffraction, IR spectroscopy, diffuse reflectance spectra and atomic absorption spectroscopy techniques. The catalyst shows excellent catalytic activity in epoxidation of olefins using tert-butylhydroperoxide in 1,2-dichloroethane. In this report, the supported complex exhibited 100% selectivity for epoxidation with 100% conversion for cyclooctene. Nanocatalyst can be easily recovered by a magnetic field and reused for subsequent reactions for at least 5 times with less deterioration in catalytic activity.

Keywords : dioxomolybdenum (VI), epoxidation, nanocatalysis, nanoparticles, Schiff base
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