

A new manganese(III) complex anchored onto SBA-15 as efficient catalyst for selective oxidation of cycloalkanes and cyclohexene with hydrogen peroxide.

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Streszczenie

A new manganese(III) complex, $[\text{Mn}(\text{saldien})(\text{N}_3)]$, has been anchored on mesoporous SBA-15 to produce a stable, active, and selective heterogeneous catalyst SBA15- $[\text{Mn}(\text{saldien})(\text{N}_3)]$ (saldien = *N,N'*-bis(salicylidene)diethylenetriamine). Complex $[\text{Mn}(\text{saldien})(\text{N}_3)]$ was characterized by spectroscopic methods and its structure determined by single crystal X-ray diffraction. SBA15- $[\text{Mn}(\text{saldien})(\text{N}_3)]$ was characterized by small angle X-ray diffraction (SAX), scanning electron microscopy (SEM), nitrogen sorption measurement and Fourier transform infrared spectroscopy. Both $[\text{Mn}(\text{saldien})(\text{N}_3)]$ anchored on mesoporous SBA-15 through a covalent bond and the "free" complex catalyze the oxidation of cycloalkanes and cyclohexene in acetonitrile, with H_2O_2 as terminal oxidant. A remarkable result for these systems is their capability of catalyzing efficient oxidation of the hydrocarbons with 1.2 equiv. of hydrogen peroxide. Compared to homogeneous catalyst, the heterogenized catalyst is more stable and can be recycled four times without any significant loss of activity. Immobilization of complex $[\text{Mn}(\text{saldien})(\text{N}_3)]$ onto SBA-15 increased the selectivity toward cyclohexanone in the oxidation of cyclohexane. In general, metallosalen-catalyzed reactions have been carried out in the presence of an excess of a donor ligand; however, the present reactions do not need the addition of any extra donor ligand.

Słowa kluczowe

SBA-15, manganese complexes, Heterogeneous catalyst,
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