Uniwersytet Wrocławski

Repozytorium

Plik pochodzi z repozytorium Wydziału Chemii Uniwersytetu Wrocławskiego

Efficient Epoxidation of Olefins by Silica Supported Dioxidomolybdenum(VI) Coordination Compounds

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Rok wydania

2024

Czasopismo

Catalysis Letters

Numer woluminu

154

Strony

116-131

DOI

10.1007/s10562-023-04300-7

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Molybdenum coordination compounds, $[MoO_2L^1(CH_3OH)]$ (**1**) and $[MoO_2L^2(CH_3OH)]0.5(CH_3OH)$ (**2**), were obtained by the reaction of molybdenum trioxide with ONO-donor ligands [H_2L^1 = (*E*)-4-amino-*N*′-(5-bromo-2-hydroxybenzylidene)benzohydrazide and H_2L^2 = (*E*)-4-amino-*N*′-(2-hydroxynaphthalen-1-yl)methylene)benzohydrazide]. The structures of **1** and **2** were determined by single crystal X-ray analysis and they further characterized by elemental analysis (carbon, hydrogen and nitrogen) and spectroscopic methods such as FT-IR, UV–Vis and NMR analyses. According to the structural analyses, a free amine functionality (Ph-NH_2) was present in the structure of compounds **1** and **2**. Therefore, compounds **1** and **2** were supported on the surface of functionalized silica gel by amidification reaction. The obtained supported catalysts (**Si-Mo-1** and **Si-Mo-2**) were characterized by XPS, XRD, EDX, DRS, TGA and FT-IR analyses. The obtained supported catalysts (**Si-Mo-1** and **Si-Mo-2**) were tested in the epoxidation of olefins using aqueous TBHP oxidant. Some effective parameters on the selectivity and activity of **Si-Mo-1** and **Si-Mo-2** like the effect of the concentration of catalyst and oxidant, temperature and solvent were studied. The supported catalysts were easily recovered from the mixture of the reaction by filtration and the recovered catalysts were also characterized by various analyses. The results indicated that the supported catalysts (**Si-Mo-1** and **Si-Mo-2**) are selective and effective catalysts for epoxidation of olefins.

Adres publiczny

http://dx.doi.org/10.1007/s10562-023-04300-7

Strona internetowa wydawcy

http://link.springer.com

Plik został wygenerowany dnia 2026-11-02 05:58:45
Adres w repozytorium https://old.chem.uni.wroc.pl/pl/repozytorium/kLR6Rew.