

Electronic effects of aromatic rings on the catalytic activity of dioxidomolybdenum(VI)-hydrazone complexes.

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Streszczenie

Nine dioxidomolybdenum(VI) complexes were synthesized through the reactions of MoO_3 with tridentate hydrazone Schiff base ligands obtained from the reactions of aromatic acid hydrazides (3-hydroxy-2-naphthoic acid hydrazide, 4-pyridinecarboxylic acid hydrazide and 2-furoic acid hydrazide) and *ortho*-hydroxy aldehyde derivatives (5-iodo-2-hydroxybenzaldehyde, 2-hydroxy-1-naphthaldehyde and 2-hydroxy-3-methoxybenzaldehyde). All of the ligands and complexes were characterized by elemental analysis and spectroscopic methods. The structures of seven complexes were further elucidated by single-crystal X-ray diffraction analysis, which indicated distorted octahedral geometries at the metal centres. Spectroscopic and X-ray analyses indicated that the ligands are coordinated to the molybdenum(VI) ions as dianionic ligands owing to the deprotonation of the phenolic OH and amidic NH groups upon complexation. These complexes were used as catalysts for the oxidation of cyclooctene and thioanisole in the presence of hydrogen peroxide as an environmentally friendly oxidant. To achieve the highest catalytic activity, the effects of important parameters such as the solvent, temperature and molar ratio of the oxidant to the substrate were optimized. The results indicate that electron-withdrawing substituents on the ligands increase the catalytic activities of dioxidomolybdenum(VI) hydrazone complexes.

Słowa kluczowe

Heterogeneous catalysis, molybdenum, epoxidation, schiff bases, structure elucidation

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