Molecular structure and catalytic activity of Fe(III) coordination compound with ONO-donor hydrazone ligand in the oxidation of cyclooctene by H_2O_2

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Streszczenie

A new mononuclear Fe(III) hydrazone Schiff base coordination compound, $[Fe(HL)Cl_2]\cdot CH_3OH$ (**1**), was synthesized and characterized by spectroscopic methods and elemental analyses. The compound was obtained by the reactions of $FeCl_3\cdot 6H_2O$ and ONO-donor hydrazone Schiff base ligand (H_2L = (*E*)-3-hydroxy-*N*′-((*Z*)-4-hydroxy-4-phenylbut-3-en-2-ylidene)-2-naphthohydrazide) in methanol. The structure of compound **1** was also determined by single crystal X-ray diffraction studies. The catalytic activity of compound **1** was investigated in oxidation of cyclooctene by hydrogen peroxide as a green oxidant and the effects of some influencing parameters like temperature, solvent and the ratio of the reagents were investigated. The results of studies indicated these parameters have considerable effect on the catalytic activity of compound **1**. The interaction of compound **1** and H_2O_2 was studied by UV-Vis spectroscopy and the results showed new catalytically active species form by their interactions which act as intermediates in oxidation process of substrate.

Słowa kluczowe

Fe(III) coordination compound, ONO-donor ligand, Hydrazone, Catalytic epoxidation, Spectroscopic studies

Adres publiczny

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