

Syntheses, structures and catalytic activities of dinuclear copper complexes with tetradentate diaminebis (phenolate) ligands.

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Streszczenie

Two new Cu(II) complexes were synthesized from $\text{Cu}(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$ and salan ligands, $\text{H}_2[\text{H}_4]\text{L}^1$ and $\text{H}_2[\text{H}_4]\text{L}^2$ ($\text{H}_2[\text{H}_4]\text{L}^1 = N,N'$ -bis(*o*-hydroxybenzyl)-1,2-diaminocyclohexane; $\text{H}_2[\text{H}_4]\text{L}^2 = N,N'$ -bis(*o*-hydroxybromobenzyl)-1,2-diaminocyclohexane). They were characterized by various spectroscopic methods and structures of the complexes determined by X-ray diffraction analyses. Interestingly, $\text{H}_2[\text{H}_4]\text{L}^1$ coordinates to copper centers as monoanionic in a tetradentate mode in complex **1**, $[\text{Cu}(\text{H}[\text{H}_4]\text{L}^1)]_2 \cdot 2\text{NO}_3 \cdot 2\text{H}_2\text{O}$, whereas $\text{H}_2[\text{H}_4]\text{L}^2$ behaves as a dianionic ligand in complex **2**, $[\text{Cu}([\text{H}_4]\text{L}^2)]_2 \cdot 0.4\text{H}_2\text{O}$, via the *O,N,N',O'*-donor atoms. The asymmetric unit in the complexes is dimerized about a center of inversion by asymmetric bridging of the phenoxide-O atom between two metal centers. The electronic spectra studies of the complexes in various solvents with different coordination numbers proved the stability of the dinuclear complexes in solvents other than DMSO and DMF. Complexes **1** and **2** showed high catalytic activities with good-to-excellent selectivities in the oxidation of olefins, benzyl alcohol and ethyl benzene with H_2O_2 in acetonitrile. A probable mechanism is discussed.

Adres publiczny

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