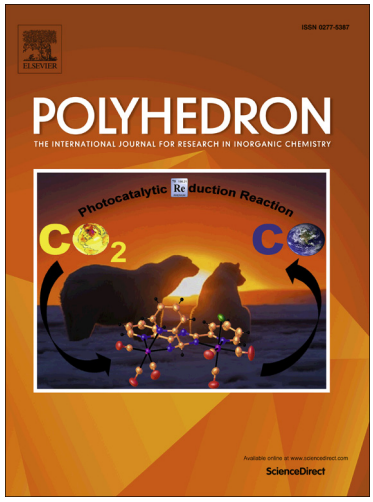

Structural investigation of nickel(II) complexes with bidentate aminoether ligands in solution based on the electronic spectra

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Structural Investigation of Nickel(II) Complexes with Bidentate Aminoether Ligands in Solution Based on the Electronic Spectra

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Abstract

For the purpose of investigating molecular structures in solution based on electronic spectra, two mononuclear nickel(II) complexes, $[Ni(moen)_2(DMF)_2](BPh_4)_2$ (**1**) and $[Ni(thfn)_2(DMF)_2](BPh_4)_2$ (**2**), were newly prepared using bidentate aminoether ligands [moen = 2-methoxyethylamine; thfn = 2-tetrahydrofurfurylamine; DMF = *N*,*N*-dimethylformamide]. Judging from the molar conductance, the complexes are considered to exist as monomeric cations in DMF solution. The electronic spectra of the complexes were measured in DMF and the spectra were typical for an octahedral geometry for both complexes, showing three spin-allowed d-d transition bands. Using the Gaussian curve fitting method, the spin-allowed bands were found to show a 2:1, 1:2 and 1:2 splitting pattern from lower to higher energy, which corresponds to a tetragonally elongated geometry. That is, the axial ligand field is weaker than the equatorial ligand field, and the ether

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