



Spectrometric Analyses, Structure and Voltammetric Study of Nickel(II) with N[(1E) Phenylmethylene N₂[2(2Hydroxyphenylmethylene)Amino ethyl] Imidazolidin-1-yl Ethylamine

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Résumé en anglais

The reaction of N[(1E) phenylmethylene N₂[2(2hydroxyphenylmethylene)amino ethyl] imidazolidin -1-yl ethylamine ligand (H 3 L) with nickel(II) salt, by heating at 40°C and addition of NaOH in excess, was made by eliminating of the phenol substituted imidazolidine ring, giving the mononuclear nickel(II) complex of the deprotonated bis-salicylaldehyde-triethylenetetramine (L -2). UV-Vis, FTIR and structural resolution show an octahedral geometry for [NiL]·6H₂O complex. This compound has been characterized by single crystal X-ray diffraction study. This technique reveals that Ni-H 2 L involves a high-spin nickel(II) ion within a pseudo-octahedral geometry. The Ni(II) complex has NiN 4 O 2 coordination sphere as established from a crystal structure determination. The crystals of Ni(II) complex are tetragonal, space group P4/ncc, a = b = 19.348 Å; c = 13.201 Å. R(F) value (0.0528) found shows a very good precision of the determined geometrical parameters. Cyclic voltammetry of nickel complex is indicative of electronic communication between the nickel center via Schiff base ligand. The results obtained confirm the imidazolidine ring-cleavage reaction and the elimination of the substituted phenol on this ring and show that the presence of H 3 L ligand around the metallic center stabilizes the oxidation of the Ni(II) to Ni(III).

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