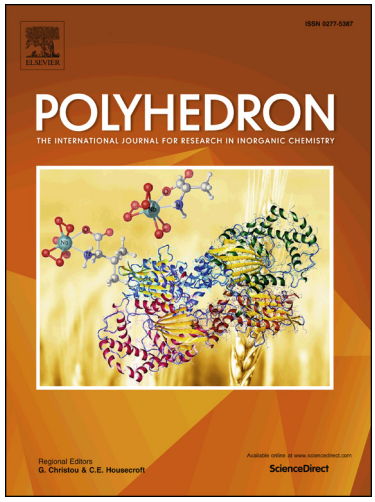

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Synthesis, structural characterization and properties of some novel siloxane-based *bis*-Schiff base copper(II), nickel(II) and manganese(II) complexes

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Abstract

In this paper we describe the synthesis and characterization of three metal complexes, namely **CuL(Id3c)**, **NiL(Id4c)** and **MnL(Id6c)**, obtained from a Schiff base ligand containing a flexible tetramethyldisiloxane group. The molecular structures of the metal complexes are determined by X-ray single-crystal diffraction analysis, FT-IR and UV-vis spectroscopy and elemental analysis. The inability of the tetramethyldisiloxane units to be involved in H-bond formation hinders the structure packing. Centro-symmetrical dimers of **NiL(Id4c)** and **MnL(Id6c)** are formed through π-π stacking interactions between the aromatic rings or by weak C-H···O intermolecular contacts in **CuL(Id3c)**. The optical and fluorescence properties of the ligand and metal complexes are reported and discussed in relation to their structures.

Introduction

Schiff base-type compounds represent one of the most used ligands in coordination chemistry, with their syntheses being relatively easy and involving a wide variety of carbonyl and amine compounds [1,2]. The presence of the lone electron pair in the sp^2 hybridized orbitals of the nitrogen atom of the azomethine group [3] gives them a remarkable ability to coordinate to different metals ions from *s, p, d* or *f* blocks with different oxidation states [4-8].

Based on a variety of Schiff base ligands with different numbers of coordination sites (starting with the bicompartimental N_2O_2 types up to the polydentate N_xO_y structures), a large number of molecular structures with targeted properties (optical, magnetic or electrical) have been reported. They have been shown to be successfully applied in areas such as medicine (for obtaining active principles) [9], biology (as antibacterial, antifungal and antitumoral agents) [10], analytical