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New complexes of Ni(II) and Co(III) with a Schiff-base ligand derived from *o*-vanillin. Crystal structure, magnetic and catalytic properties of a dissymmetric binuclear nickel(II) complex

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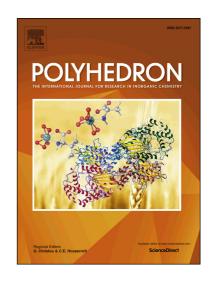
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## **ACCEPTED MANUSCRIPT**

New complexes of Ni(II) and Co(III) with a Schiff-base ligand derived from *o*-vanillin. Crystal structure, magnetic and catalytic properties of a dissymmetric binuclear nickel(II) complex

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Dedicated to Professor Spyros Perlepes, a great scientist and friend

#### **ABSTRACT**

A binuclear complex,  $[Ni_2L_2(NO_3)(H_2O)(CH_3CN)]CIO_4\cdot CH_3CN$  (1), has been obtained using a Schiff-base ligand (HL) derived from o-vanillin and 4-(2-aminoethyl)morpholine. The crystal structure of 1 has been solved. Both Ni(II) ions are hexacoordinated, but they display different coordination spheres. The exchange interaction between the two nickel ions is antiferromagnetic  $(J = -7.9 \pm 0.2 \text{ cm}^{-1}; H = -JS_1S_2)$ , in line with the DFT calculations. Compound 1 was tested as a catalyst in the epoxidation of various olefins. The reaction of the same ligand with a mixture of cobalt(II) perchlorate and nitrate affords a mononuclear Co(III) complex,  $[CoL_2(H_2O)]ClO_4\cdot CH_3OH$  (2).

**Keywords:** nickel complexes; cobalt complexes; Schiff-base ligands; magnetic properties; catalysis

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