

## 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

Vlad Andrei Neacșu, Cătălin Maxim, Augustin M. Mădălan, Mihaela Hillebrand, María del Camino González-Arellano, Stéphane Soriano, Eva Rentschler, Marius Andruh

PII: S0277-5387(18)30227-4  
DOI: <https://doi.org/10.1016/j.poly.2018.05.007>  
Reference: POLY 13152

To appear in: *Polyhedron*

Received Date: 1 March 2018  
Accepted Date: 1 May 2018

Please cite this article as: V.A. Neacșu, C. Maxim, A.M. Mădălan, M. Hillebrand, M. del Camino González-Arellano, S. Soriano, E. Rentschler, M. Andruh, 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, *Polyhedron* (2018), doi: <https://doi.org/10.1016/j.poly.2018.05.007>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# 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

Vlad Andrei Neacșu<sup>a</sup>, Cătălin Maxim<sup>a</sup>, Augustin M. Mădălan<sup>a</sup>, Mihaela Hillebrand<sup>b</sup>, María del Camino González-Arellano<sup>c</sup>, Stéphane Soriano<sup>d</sup>, Eva Rentschler<sup>e</sup>, Marius Andruh<sup>a,\*</sup>

<sup>a</sup> *Inorganic Chemistry Laboratory, Faculty of Chemistry, University of Bucharest, Str. Dumbrova Roșie nr. 23, 020464-Bucharest, Romania, E-mail: marius.andruh@dnt.ro*

<sup>b</sup> *Department of Physical Chemistry, Faculty of Chemistry, University of Bucharest*

<sup>c</sup> *Departamento de Química Orgánica y Química Inorgánica, Facultad de Farmacia, Universidad de Alcalá, Campus Universitario, Autovía A2, 33.600, 28871 Alcalá de Henares, Madrid, Spain*

<sup>d</sup> *Instituto de Física, Universidade Federal Fluminense, Niterói, Rio de Janeiro, 24020-140, Brazil*

<sup>e</sup> *Institute of Inorganic and Analytical Chemistry, Johannes Gutenberg University Mainz Duesbergweg 10–14, 55128- Mainz, Germany*

*Dedicated to Professor Spyros Perlepes, a great scientist and friend*

## ABSTRACT

A binuclear complex,  $[\text{Ni}_2\text{L}_2(\text{NO}_3)(\text{H}_2\text{O})(\text{CH}_3\text{CN})]\text{ClO}_4 \cdot \text{CH}_3\text{CN}$  (**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 ( $J = -7.9 \pm 0.2 \text{ cm}^{-1}$ ;  $\mathbf{H} = -J\mathbf{S}_1\mathbf{S}_2$ ), 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,  $[\text{CoL}_2(\text{H}_2\text{O})]\text{ClO}_4 \cdot \text{CH}_3\text{OH}$  (**2**).

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

Download English Version:

<https://daneshyari.com/en/article/7762513>

Download Persian Version:

<https://daneshyari.com/article/7762513>

[Daneshyari.com](https://daneshyari.com)