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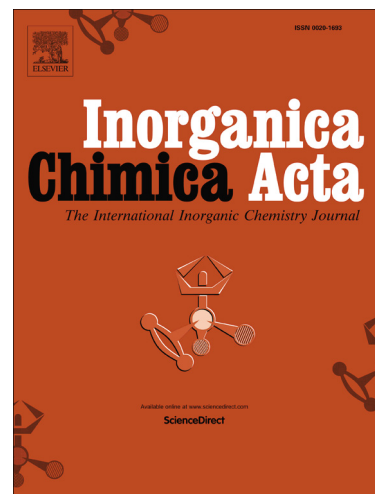
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Nickel precursors based on diamagnetic and paramagnetic di(imine)pyridine ligands for magnetic materials: Synthesis, X-ray structures and magnetic studies.

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Abstract

Structural characterization and spectroscopic studies of the (2-acetyl-6-(1-TEMPO-imino)ethyl)pyridine (pat) and the 2,6-bis(1-TEMPO-imino)ethylpyridine (pbtMe) ligands are presented. Their electrochemical properties are also discussed. Two new nickel complexes, $[\text{Ni}^{\text{II}}(\text{dip})(\text{CH}_3\text{CN})(\text{H}_2\text{O})_2](\text{BF}_4)_2$ (**1**) (dip = 2,6-(di-iminepyridine)) and $[\text{Ni}^{\text{II}}(\text{pbtMe})(\text{CH}_3\text{CN})_3](\text{BF}_4)_2$ (**2**) have been characterized by X-ray diffraction. The reaction of **1** with the tetraethyl ammonium pentacyanopropenide salt $(\text{Et}_4\text{N})(\text{pcp})$ affords the new compound $[\text{Ni}^{\text{II}}(\text{pcp})(\text{dip})(\text{CH}_3\text{CN})](\text{pcp})$ (**3**) for which X-ray diffraction studies evidence an usual bridging μ_2 coordination mode for the pentacyanopropenide anion, leading to chains running along the [100] direction with Ni...Ni intra-chains distances of 10.653 Å. Magnetic measurements for **3** indicate that it presents antiferromagnetic interactions that can be reproduced with a $S = 1$ regular chain model with $g = 2.115(1)$ and $J_{\text{chain}} = -0.589(5) \text{ cm}^{-1}$.

Keywords: Di(imine)pyridine ligands / Nickel complexes / Coordination polymer / Magnetic interactions

1. Introduction

Molecular magnetism is one of the most fascinating topics amongst current research areas. It addresses magnetic and electronic materials not only for physical applications, but it also concerns bioinorganic chemistry. Owing to numerous and varied applications it offers in many domains, the

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