## Accepted Manuscript

#### Research paper

A series bi-spin transition metal(II) complexes based on triazole nitronyl nitroxide radical

Ting Li, Xiu Juan Shi, Peng Yun Chen, Si Jia Yu, Li Tian

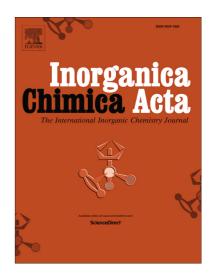
PII: S0020-1693(16)30984-7

DOI: http://dx.doi.org/10.1016/j.ica.2017.02.025

Reference: ICA 17451

To appear in: Inorganica Chimica Acta

Received Date: 5 December 2016 Revised Date: 19 February 2017 Accepted Date: 21 February 2017



Please cite this article as: T. Li, X.J. Shi, P.Y. Chen, S.J. Yu, L. Tian, A series bi-spin transition metal(II) complexes based on triazole nitronyl nitroxide radical, *Inorganica Chimica Acta* (2017), doi: http://dx.doi.org/10.1016/j.ica. 2017.02.025

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.

### **ACCEPTED MANUSCRIPT**

# A series bi-spin transition metal(II) complexes based on triazole nitronyl nitroxide radical

Ting Li<sup>a</sup>, Xiu Juan Shi<sup>a</sup>, Peng Yun Chen<sup>a</sup>, Si Jia Yu<sup>a</sup>, and Li Tian<sup>a,\*</sup>

<sup>a</sup> Tianjin Key Laboratory of Structure and Performance for Functional Molecule, Key Laboratory of Inorganic-Organic Hybrid Functional Material Chemistry, Ministry of Education, Tianjin Normal University, Tianjin 300387, P. R. China.

**Abstract:** Four new transition complexes were obtained by using triazole nitronyl nitroxide radical as ligand. The complexes with formula [Mn(4-Me-3-Nit-trz)(hfac)<sub>2</sub>] (1) and [M(4-Me-3-Nit-trz)(hfac)<sub>2</sub>]<sub>2</sub> [M = Co(II) **2**, Ni(II) **3**, Cu(II) **4**; 4-Me-3-Nit-trz = 2-[3-(4-methyl-1,2,4-triazolyl)]-4,4,5,5-tetramethylimidazoline-1-oxyl-3-oxide; hfac = hexafluoroacetylacetone] are characterized structurally and magnetically. The metal ions in the four complexes are all in six-coordinated environment with four oxygen atoms from two hfac ligands, and one radical oxygen atom and one triazole nitrogen atom from a two teeth 4-Me-3-Nit-trz ligand. The magnetic behaviors for 1-3 indicate that the metal ions and the direct coordinated radicals are antiferromagnetically coupled ( $J_{\text{Mn-rad}} = -49.61 \text{ cm}^{-1}$ , for 1;  $J_{\text{Co-rad}} = -22.36 \text{ cm cm}^{-1}$ , for 2;  $J_{\text{Ni-rad}} = -115.39 \text{ cm}^{-1}$ , for 3), whereas a ferromagnetic coupling between the Cu(II) ion and the nitroxide group ( $J_{\text{Cu-rad}} = 3.45 \text{ cm}^{-1}$ ) is observed in 4.

Keywords: radicals, nitronyl nitroxide, triazole, mononuclear, magnetic properties

### 1. Introduction

Nitronyl nitroxide radicals which can not only act as spin carriers but also as bridging ligands attract much attention since the discovery of the first single chain magnets (SCMs) by D. Gatteschi's group [1]. Recently, the chemistry and magnetic

<sup>\*</sup> To whom correspondence should be addressed. E-mail: lilytianli@hotmail.com

### Download English Version:

# https://daneshyari.com/en/article/5151740

Download Persian Version:

https://daneshyari.com/article/5151740

<u>Daneshyari.com</u>