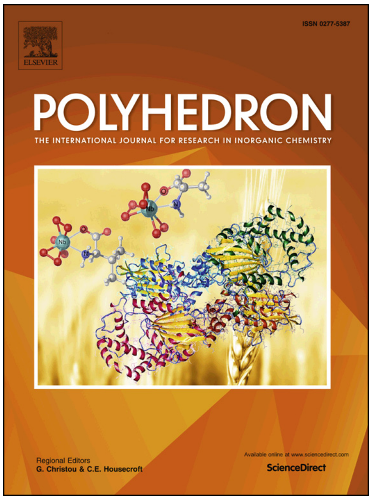

Structure and magnetic behavior of unpredictable EE-azide bridged tetranuclear Mn(II) complex with ONO-donor hydrazone ligand and its transformation to dinuclear Mn(III) complex

Rahman Bikas, Victor Kuncser, Joaquín Sanchiz, Gabriel Schinteie, Milosz Siczek, Hassan Hosseini-Monfared, Tadeusz Lis

PII: S0277-5387(18)30144-X
DOI: https://doi.org/10.1016/j.poly.2018.03.019
Reference: POLY 13085

To appear in: *Polyhedron*

Received Date: 26 January 2018
Accepted Date: 21 March 2018

Please cite this article as: R. Bikas, V. Kuncser, J. Sanchiz, G. Schinteie, M. Siczek, H. Hosseini-Monfared, T. Lis, Structure and magnetic behavior of unpredictable EE-azide bridged tetranuclear Mn(II) complex with ONO-donor hydrazone ligand and its transformation to dinuclear Mn(III) complex, *Polyhedron* (2018), doi: https://doi.org/10.1016/j.poly.2018.03.019

Structure and magnetic behavior of unpredictable EE-azide bridged tetranuclear Mn(II) complex with ONO-donor hydrazone ligand and its transformation to dinuclear Mn(III) complex

Rahman Bikas,[a*] Victor Kuncser,[b] Joaquín Sanchiz,[c] Gabriel Schinteie,[b] Milosz Siczek,[d] Hassan Hosseini-Monfared,[e] Tadeusz Lis[d]

[a] *Department of Chemistry, Faculty of Science, Imam Khomeini International University, 34148-96818, Qazvin, Iran*

[b] *National Institute of Materials Physics, P.O. Box MG-7, Bucharest-Magurele 077125, Romania*

[c] *Department of Chemistry, Faculty of Science, University of La Laguna, Tenerife 38206, Spain*

[d] *Faculty of Chemistry, University of Wroclaw, Joliot-Curie 14, Wroclaw 50-383, Poland*

[e] *Department of Chemistry, Faculty of Science, University of Zanjan, 45371-38791, Zanjan, Iran*

Abstract

The reaction of $MnCl_2·4H_2O$ with sodium azide and ONO-donor hydrazone ligand, (H_2L = (*E*)-3-hydroxy-*N'*-((*Z*)-4-hydroxy-4-phenylbut-3-en-2-ylidene)-2-naphthohydrazide), in methanol gives rise to the formation of red crystals which are stable out of the solvent. The red crystals slowly transform to brown crystals in the methanolic solution. In the last case, the rate of the transformation from red to brown crystals mainly depends on the presence of molecular oxygen and reaction temperature. Both compounds are characterized by elemental analysis, spectroscopic methods and single crystal X-ray diffraction studies. The X-ray analysis indicates that the red crystals consist of a tetranuclear Mn(II) complex molecules, $[Mn_4(H_{0.5}L)_4(\mu_{1,3}\text{-}N_3)_2(CH_3OH)_4]$ (**1**), while the brown crystals consist of dinucelar Mn(III), $[Mn_2L_2(\mu_{1,1}\text{-}OCH_3)_{1.5}(\mu_{1,1}\text{-}N_3)_{0.5}]$ (**2**) molecules. In complex **1** molecules of D_2 (222)

---

[*] Corresponding author. Tel.: +98 283 3901368; fax: +98 283 3780083 *E-mail address*: bikas_r@yahoo.com (R. Bikas)