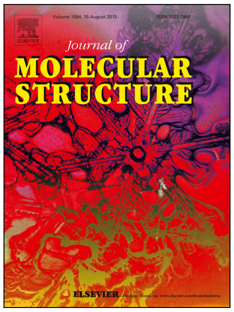

Synthesis, characterization and structure assessment of mononuclear and binuclear low-spin manganese(II) complexes derived from oxaloyldihydrazones, 1,10-phenanthroline and 2,2′-bipyridine

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PII: S0022-2860(18)30480-0
DOI: 10.1016/j.molstruc.2018.04.043
Reference: MOLSTR 25116

To appear in: *Journal of Molecular Structure*

Received Date: 7 November 2017
Revised Date: 10 April 2018
Accepted Date: 11 April 2018

Please cite this article as: I. Syiemlieh, A. Kumar, S.D. Kurbah, R.A. Lal, Synthesis, characterization and structure assessment of mononuclear and binuclear low-spin manganese(II) complexes derived from oxaloyldihydrazones, 1,10-phenanthroline and 2,2′-bipyridine, *Journal of Molecular Structure* (2018), doi: 10.1016/j.molstruc.2018.04.043.

Synthesis, characterization and structure assessment of mononuclear and binuclear low-spin manganese(II) complexes derived from oxaloyldihydrazones, 1,10-phenanthroline and 2,2'-bipyridine

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Abstract

Low-spin manganese(II) complexes [$Mn^{II}(H_2slox)(bipy)$] (1), [$Mn^{II}(H_2slox)(phen)$] (2), [$Mn^{II}(H_2slox)(phen)$].1.5.H_2O (2a), [$Mn^{II}(H_2nph)(bipy)$].H_2O (3) and [$Mn^{II}(H_2nph)(phen)$].H_2O (4) were synthesized from oxaloyldihydrazones in methanolic-water medium. The stoichiometry of the complexes was established by analytical, molecular weight and thermoanalytical data. Based on the data obtained from molar conductance, UV-visible, Infrared spectral, magnetic moment and electron paramagnetic resonance spectroscopic studies, the structures of the complexes have been established. From molar conductance it is suggested that all the complexes are non-electrolyte in DMF medium. The complex (2a) is monomeric in nature whereas the complexes (1) to (4) are dimeric based on the molecular weight data. The effective magnetic moment of complexes (1) to (4) show metal-metal interaction while complex (2a) has no metal-metal interaction. The complexes (1) – (4) show two quasi-reversible metal centred electron transfer reaction involving $Mn^{II}/Mn^{I}/Mn^{0}$ redox reactions in DMF medium.

Introduction