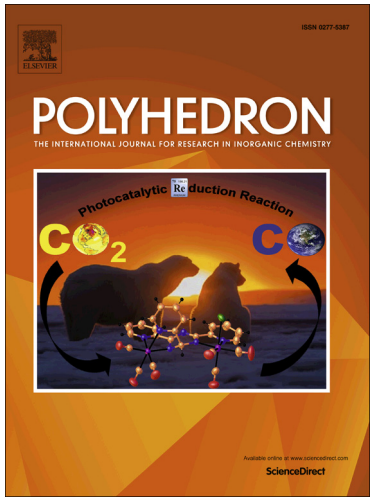

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PII: S0277-5387(14)00793-1
DOI: http://dx.doi.org/10.1016/j.poly.2014.12.028
Reference: POLY 11116

To appear in: *Polyhedron*

Received Date: 6 November 2014
Accepted Date: 23 December 2014

Please cite this article as: M. Stolárová, J. Černák, M. Tomás, I. Ara, M. Orendá č, L.R. Falvello, Two novel coordination polymers in the family of lanthanide complexes with o-phenylenedioxydiacetato as ligand, *Polyhedron* (2015), doi: http://dx.doi.org/10.1016/j.poly.2014.12.028

Two novel coordination polymers in the family of lanthanide complexes with o-phenylenedioxydiacetato as ligand

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Abstract

Two novel coordination polymers $[Ce(PDOA)(NO_3)(H_2O)_2]_n$ (**1**) and $\{[Ce(PDOA)(NO_3)(H_2O)_3]\cdot H_2O\}_n$ (**2**) (PDOA = o-phenylenedioxydiacetato) have been prepared using hydrothermal conditions and have been structurally characterized. In both crystal structures **1** and **2** the Ce(III) atoms are decacoordinated by oxygen atoms from PDOA ligands with chelating and bridging functions, chelating nitrato ligands and aqua ligands. While in **1** the PDOA ligand presents a hexadentate coordination mode, in **2** it is coordinated in a pentadentate manner; this difference leads to different types of one-dimensional structural motifs: in **2** there are zig-zag chains of the -Ce-O-C-O-Ce- type with *syn-anti* carboxylate bridges and in **1** these chains are additionally interlinked by further *syn-anti* carboxylate bridges leading to a strip- or ribbon-like arrangement formed of $\{Ce_3\}$ fused triangles. The endothermic dehydration of **1** within the temperature range 69-199 ºC is at least a two-step process as suggested by TG and DTA methods. A variable temperature (2-300 K) magnetic study reveals Curie-Weiss behavior for **1** with θ = -35.5 K observed above 50 K. The origin of the observed behavior is discussed.

***Keywords*:** coordination polymer; Ce(III) complex; crystal structure; nitrate; o-phenylenedioxydiaceto ligand

1. Introduction

Increasing interest in the design, synthesis and characterization of new lanthanide complexes has been stimulated by their structural diversity and potential applications in catalysis,