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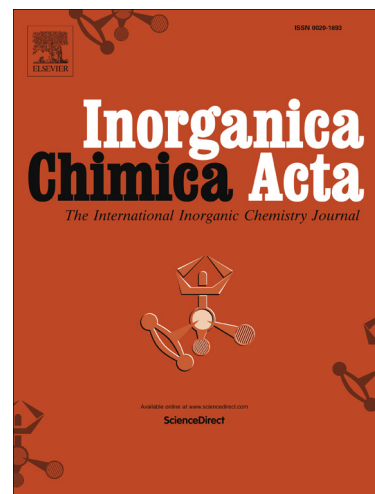
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# Syntheses, Crystal Structures, and Magnetic Properties of Two 1D Manganese(II) Complexes Bearing Fluorenylcarboxylate Ligands

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## Abstract

1D manganese carboxylates  $[\text{Mn}(\text{mfa})_2(\text{H}_2\text{O})]_n$  (**1**) and  $\{[\text{Mn}_3(\text{mfp})_6(\text{CH}_3\text{OH})_2] \cdot 2\text{CH}_3\text{OH}\}_n$  (**2**) (Hmfa = 2-(9-methyl-9H-fluoren-9-yl)acetic acid, Hmfp = 3-(9-methyl-9H-fluoren-9-yl)propanoic acid) were synthesized by reactions of  $\text{Mn}(\text{ClO}_4)_2 \cdot 6\text{H}_2\text{O}$  and the corresponding carboxylate. In compound **1**, the Mn(II) ions are bridged by two carboxylate groups in  $\mu_2\text{-}\eta^1, \eta^1$  and  $\mu_2\text{-}\eta^2, \eta^1$  bridging modes into one uniform chain. Compound **2** has a distinctive chainlike structure contrast to compound **1**, that are constructed alternatively from mononuclear Mn(II) and dinuclear  $[\text{Mn}_2(\text{mfp})_2(\text{CH}_3\text{OH})_2]$  units by two  $\mu_2\text{-}\eta^1, \eta^1$ -carboxylates and one O atom from the third carboxylate ligand. Magnetic susceptibility measurements revealed a weak antiferromagnetic coupling for both complexes. The magnetic data were fitted by using uniform chain and -AF1-AF1-AF2-antiferromagnetic chain models for **1** and **2**, respectively.

**Keywords:** Manganese; Fluorenylcarboxylate; Magnetic property

## Introduction

Manganese/carboxylates have been well studied for their potential applications in the fields of biomimic chemistry, catalysis and magnetism [1]. Monocarboxylic acids  $\text{RCO}_2\text{H}$  ( $R$  = alkyl, aryl) are one class of ligands that are always employed to construct manganese-based complexes [2]. For example, clusters  $[\text{Mn}_{12}\text{O}_{16}(\text{O}_2\text{CR})_{16}(\text{H}_2\text{O})_4]$  [3], 3D  $[\text{Mn}_3(\text{HCOO})_6]$  [4] and  $[\text{Mn}(\text{PhCO}_2)_2]_n$  [5] were constructed with the corresponding ligands. The structural diversity stem from the type of carboxylic acid and reaction conditions [6]. The magnetic property study indicates that clusters show single-molecule magnet behavior, while  $[\text{Mn}_3(\text{HCOO})_6]$  exhibits long-range magnetic ordering

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