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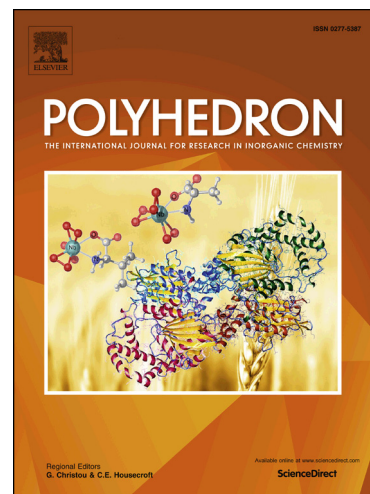
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Structures, fluorescence properties and magnetic properties of a series of dinuclear lanthanide(III) compounds: Dy₂ compound showing single-molecule magnet behavior

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Abstract

A series of dinuclear lanthanide(III) compounds, namely, [Ln₂(tmhd)₂L₂(CH₃OH)₂] (Ln(III) = Sm (**1**), Eu (**2**), Dy (**3**) and Er (**4**); H₂L = 2-amino-benzoic acid (8-hydroxy-quinolin-2-ylmethylene)-hydrazide, Htmhd = 2,2,6,6-tetramethyl-3,5-heptanedione), have been synthesized, structurally and magnetically characterized. The X-ray structural analysis exhibit that **1-4** are phenoxo-O-bridged dinuclear compounds and central Ln(III) ions are eight-coordinated with one bidentate tmhd⁻, one CH₃OH and two μ_2 -O bridging Schiff base ligands. Magnetic measurements indicated that slow magnetic relaxation behaviors were observed in **3**, with energy barrier ($\Delta E/k_B$) of 13.14 K and $\tau_0 = 4.58 \times 10^{-6}$ s, however, no out-of-phase (χ'') alternating current (ac) signals noticed in **1**, **2** and **4**. Additionally, solid-state luminescence properties reveal that **1-3** display the characteristic Ln^{III} luminescence at room temperature.

Keywords: dinuclear lanthanide(III) compounds; fluorescence properties; magnetic properties; single-molecule magnet behavior.

1. Introduction

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