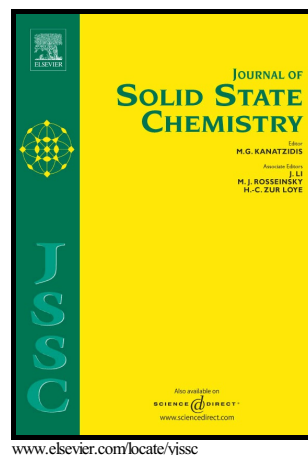


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Structural description, luminescent and magnetic properties of novel 2-D coordination polymers containing thiazolo[5,4-d]thiazole rings and trivalent lanthanide ions

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Abstract

In this work, we have synthesized six coordination polymers $[\text{Ln}_2(\text{Thz})_3 \cdot 8\text{H}_2\text{O}]\cdot 4\text{H}_2\text{O}$ ($\text{Ln} = \text{La}^{3+}, \text{Ce}^{3+}, \text{Nd}^{3+}, \text{Sm}^{3+}, \text{Eu}^{3+}, \text{Gd}^{3+}$; $\text{Thz} = \text{thiazolo}[5,4\text{-d}]\text{thiazole-2,5-dicarboxylate}$). These are the first structures combining this ligand with lanthanides. All compounds crystallize in the P-1 triclinic system, forming a 2-D coordination network. Luminescence spectra for the Nd^{3+} , Sm^{3+} , and Eu^{3+} structures show the typical transitions of these ions, through the antenna effect promoted by the ligand. The magnetic properties of Ce^{3+} , Nd^{3+} , Sm^{3+} , Eu^{3+} , Gd^{3+} compounds were analyzed in terms of the free ion approximation. The variable-temperature susceptibility fitted with a Curie-Weiss law shows the existence of weak magnetic interactions at low temperatures for the Ce^{3+} , Nd^{3+} and Sm^{3+} compounds, and paramagnetic behavior for the Gd^{3+} compound.

Graphical abstract

One layer of the 2-D coordination polymer $[\text{Ln}_2(\text{THz})_3 \cdot 8\text{H}_2\text{O}]\cdot 4\text{H}_2\text{O}$ viewed along the [101] direction.

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