

*Temperature dependent structure of 3D lanthanide coordination polymers*Suwadee Jiajaroen<sup>1</sup>, Nutcha Ponjan<sup>1</sup>, Phailyn Khemthong<sup>2</sup>, Filip Kielar<sup>2</sup>, Kittipong Chainok<sup>1</sup><sup>1</sup>Faculty Of Science And Technology, Thammasat University, Pathum Thani, Thailand, <sup>2</sup>Department of Chemistry, Faculty of Science, Naresuan University, Phitsanulok, Thailand  
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Four series of lanthanide coordination polymers with mixed dicarboxylate ligands,  $[\text{Ln}(\text{fum})_{1.5}(\text{H}_2\text{O})_2] \cdot 0.5(\text{H}_2\text{tp}) \cdot \text{H}_2\text{O}$ , ( $1\text{Ln}$ ,  $\text{Ln} = \text{Sm}, \text{Eu}, \text{Gd}, \text{Tb}, \text{Dy}, \text{Er}$ ),  $[\text{Ln}_2(\text{fum})_2(\text{tp})(\text{H}_2\text{O})_4] \cdot 2\text{H}_2\text{O}$  ( $2\text{Ln}$ ,  $\text{Ln} = \text{Sm}, \text{Eu}, \text{Gd}, \text{Tb}, \text{Dy}, \text{Er}$ ),  $[\text{Ln}(\text{fum})_{0.5}(\text{tp})]$  (Series  $3\text{Ln}$ ,  $\text{Ln} = \text{Sm}, \text{Eu}, \text{Gd}, \text{Tb}, \text{Dy}, \text{Er}$ ), and  $[\text{Ln}(\text{tp}(\text{ox})_{0.5}) \cdot \text{H}_2\text{O}$  ( $4\text{Ln}$ ,  $\text{Ln} = \text{Sm}, \text{Eu}, \text{Gd}, \text{Tb}, \text{Dy}, \text{Er}$ ) have been prepared hydrothermally at different temperatures. Isomorphous polymers  $1\text{Ln}$  crystallize in the triclinic space group P-1 and feature a 3D framework with 4,5-connected tcs (44.62)(44.66) topology. Polymers  $2\text{Ln}$  crystallize in the monoclinic polar space group P21 and present a 2-fold interpenetrated 3D network with 6-connected pcu (412.63) topology. Polymers  $3\text{Ln}$  crystallize in the orthorhombic space group Pbc<sub>a</sub> and possess a 3D framework with an unprecedented (4,7)-connected (42.52.72)(42.53.75) topology. Polymers  $4\text{Ln}$  crystallize in the monoclinic space group P21/c and exhibit a 3D network with 4,5-connected tcj/hc (42.52.72)(42.53.75) topology. The thermal stability and photoluminescent properties of Eu(III) and Tb(III) compounds were investigated in detail.

**Keywords:** [Hydrothermal synthesis](#), [Lanthanide coordination polymers](#), [Luminescence](#)