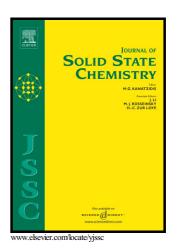
# Author's Accepted Manuscript

Five isomorphic lanthanide metal-organic frameworks constructed from 5-(3-carboxyphenyl)-pyridine-2-carboxylic acid and oxalate: synthesis, crystal structures and selective fluorescence sensing for aniline

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### **ACCEPTED MANUSCRIPT**

Five isomorphic lanthanide metal-organic frameworks constructed from 5-(3-carboxy-phenyl)-pyridine-2-carboxylic acid and oxalate: synthesis, crystal structures and selective fluorescence sensing for aniline

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#### **Abstract**

Five isomorphic lanthanide metal-organic frameworks from constructed 5-(3-carboxy-phenyl)-pyridine-2-carboxylic acid (H<sub>2</sub>cppca) and oxalate  $(H_2ox)$ ,  ${[Ln_2(cppca)_2(ox)(H_2O)_2]\cdot 2H_2O}_n$  [Ln = Eu (1), Gd (2), Nd (3), Pr (4),Tb (5)] have been successfully synthesized and characterized by single-crystal X ray diffraction, elemental analysis, IR spectroscopy, thermal analysis, and powder X-ray diffraction. In compounds 1-5, inorganic helical Ln-O chain and cppca<sup>2</sup> anions are interconnected to form a one-dimension (1D) helical metal-organic chain, then 1D metal-organic chains are linked into a three-dimension achiral network with 1D channel of 6.31×10.13 Å<sup>2</sup>, showing an unprecedented (4,5)-connected topology net with Schlafli symbol {4<sup>4</sup>.6<sup>2</sup>}{4<sup>4</sup>.6<sup>4</sup>.8<sup>2</sup>}. Fluorescent experiment indicated that compounds 1 and 5 show sensitive luminescence quenching response to aniline, and the corresponding quenching constants ( $K_{sv}$ ) are  $2.81 \times 10^4 \, M^{-1}$  and  $3.14 \times 10^4 \, M^{-1}$ , respectively. The detection limits of aniline are 3.06 µM for 1 and 2.29 µM for 5. Moreover, compounds 1 and 5 are very stable and their reusability is relatively high and the fluorescence can be easily recovered after washing.

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