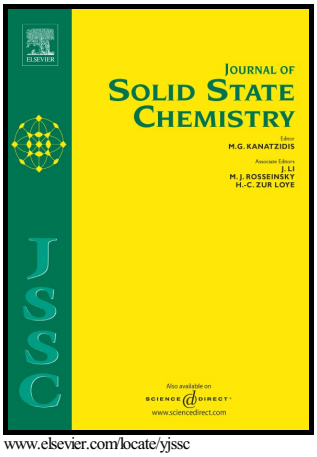

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Abstract

Five isomorphic lanthanide metal-organic frameworks constructed from 5-(3-carboxy-phenyl)-pyridine-2-carboxylic acid (H_2cppca) 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 $cppca^{2-}$ 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 $Å^2$, showing an unprecedented (4,5)-connected topology net with Schlafli symbol $\{4^4.6^2\}\{4^4.6^4.8^2\}$. Fluorescent experiment indicated that compounds 1 and 5 show sensitive luminescence quenching response to aniline, and the corresponding quenching constants (K_{sv}) are 2.81×10^4 M^{-1} and 3.14×10^4 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.