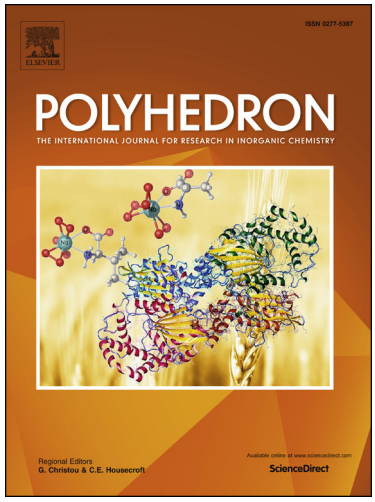

Supramolecular coordination polymers of La(III), Ce(III), Sm(III), Gd(III) and Eu(III) decorated with rigid 5-hydroxy-1,3-benzenedicarboxylate and flexible hexane-1,6-dicarboxylate linkers: Syntheses, structures, DFT study, luminescence and magnetic properties

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Abstract:

Five new coordination polymers (CPs) with the formula $[Ln(hip)(adip)_{0.5}(H_2O)_2]_n \cdot nH_2O$ [Ln = La (**1**), Ce (**2**), Sm (**3**) and Gd (**4**) and $[Ln_2(hip)_2(adip)(H_2O)_4]_n \cdot 2nH_2O$ [Ln = Eu (**5**)] were synthesized by self-assembly of lanthanide salts with rigid [5-hydroxyisophthalic acid (H_2hip)] and flexible [adipic acid (H_2adip)] linkers under solvothermal condition. The CPs **1-4** crystallizes in monoclinic $C_{2/c}$ space group, whereas CP **5** has triclinic *P-1* space groups respectively. The CPs **1-4** exhibit 1D linear ladder shaped extension with the linkage of lanthanide carboxylate chains having the backbone of H_2hip and H_2adip ligands, whereas CP **5** shows linear orthogonally twisted ladder shaped chains. The 1D linear ladder chains are grafted into three dimensional (3D)