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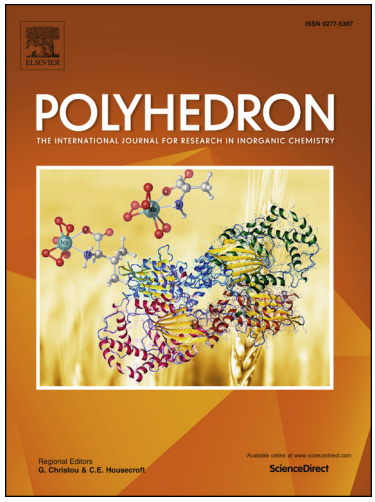

Influence of synthetic conditions on the formation of thermally and hydrolytically stable Sc-based metal-organic frameworks

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Influence of synthetic conditions on the formation of thermally and hydrolytically stable Sc-based metal-organic frameworks

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Abstract: Three new coordination polymers $((CH_3)_2NH_2)[Sc(H_2O)_2(fdc)_2]\cdot 1{,}5CH_3CN$ (**1**), $((CH_3)_2NH_2)_2[Sc(fdc)_2(HCOO)]$ (**2**), $[Sc_2(H_2O)_2(fdc)_3]$ (**3**) based on scandium cations and 2,5-furandicarboxylate ligand (fdc^{2-}) have been synthesized and characterized by single crystal and powder X-Ray diffraction crystallography, TG, elemental analyses and IR-spectroscopy. Compound **1** is formed from layers bind by hydrogen bonds. Calculated accessible for solvent volume is 41 %. Compound **2** is a structure of negatively charged layers connected with interlayer dimethylammonium cations. Layered compound **3** appeared to be thermally stable (up to 300°C) and retain its structure in wide range of pH from 1 to 13**.** Additionally**,** the solid-state luminescence properties of compounds **2** and **3** we investigated.

Keywords: Coordination polymers; Metal-organic framework; Scandium complexes; Luminescence.

1. Introduction

Porous metal–organic frameworks (MOFs) or coordination polymers are prospective materials for many applications. Large inner surface area and opportunity of structural design