

Poster Presentation

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A Novel 3d-4f Coll-GdIII system with 4,5-imidazoledicarboxylate and oxalate

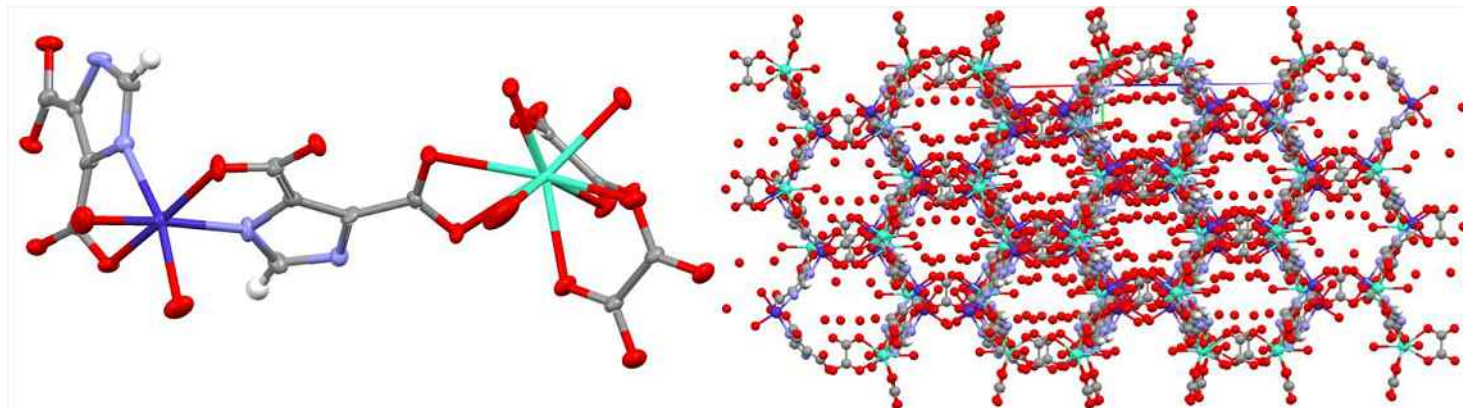
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The challenges of designing and synthesizing new materials, the complexity of their structures, and their potential physical properties have continued to attract a great deal of interest. The combination of organic and inorganic components into the same molecular backbone has captivated many researchers, and as a consequence of the multiple choices of the components and also of the used synthetic strategies, a wide variety of advanced materials has been obtained. In many cases, an increase in structural complexity gives rise to new properties, which cannot be foreseen on the basis of the single constituting moieties. Therefore, the assembly of different components, or molecular fragments, may give rise to new materials that exhibit interesting and useful physical and chemical properties in the condensed phase.¹ From a structural and synthetic point of view, the literature shows that a wide variety of polymetallic systems ranging from 0D to 3D structures have been rationally designed and synthesized by the appropriate selection of the metal centers and organic building blocks, as well as of the reaction pathways.² In this work, we will inform the synthesis and structural characterization of a novel 3d-4f bimetallic system: $\{[\text{Co}(\text{H}_2\text{O})_2(\text{ImDC})\text{Gd}(\text{ox})_2(\text{H}_2\text{O})]\cdot 2\text{H}_2\text{O}\}_n$. (ImDC: 4,5-imidazoledicarboxylate; ox: oxalate). The structure displays Coll cations having an approximately octahedral environment completed by two N,O-ImDC ligands and two water molecules, while the GdIII cations displays nine coordination completed exclusively by oxygen atoms coming from a water molecule and oxalate and ImDC anions (Figure1, left). The structure defines a covalent tridimensional lattice where two water molecules by formula are trapped inside the cavities left by this arrangement (Figure1, right). Figure 1: Structural diagram for the basic bimetallic unit $\text{Co}(\text{H}_2\text{O})_2(\text{ImDC})\text{Gd}(\text{ox})_2(\text{H}_2\text{O})$ (left) and the packing showing trapped water molecules $\{[\text{Co}(\text{H}_2\text{O})_2(\text{ImDC})\text{Gd}(\text{ox})_2(\text{H}_2\text{O})]\cdot 2\text{H}_2\text{O}\}_n$ (right). Acknowledgements: The authors acknowledge financial support from FONDECYT 1130643, Financiamiento Basal, FB0807. C.C. thanks CONICYT Fellowship.

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