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Lanthanide-transition metals molecular materials: Synthesis and Crystal structure.

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Knowledge about molecular materials structures combined with chemical crystallography concepts has always helped the chemist to understand the solid formation from some entities and consequently stirred his imagination for the construction of new varying combinations. However, the growth of a pure, well-shaped and sufficient size single crystal remains a challenge. The study of materials with structures consisting of metal centers that are linked into extended networks by bridging organic ligands is an important and growing area of modern chemistry [1]. Our work consisted in synthesizing through slow diffusion gel media [2], new tridimensional heterometallic molecular materials difficult, if not impossible, to obtain by conventional methods. A new family of isostructural compounds crystallizing in the triclinic system (space group P-1) has been obtained. The structure is composed of dinuclear chains sandwiching oxalate ligands. The three-dimensional network is ensured by hydrogen bonds O-H—O of water molecules assisted by π - π^* stacking interactions [3]. A concern underlying the chemical interest of these coordination complexes will be the search for interesting physical properties that could lead to potential applications.

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