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Synthesis of isomers produced by lanthanide contraction: the obtainment of two new 3D LnOFs based on Eu^{3+}/Tb^{3+}, and dicarboxylic mixed ligands

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In this work we have reacted the ligands thiophene-2,5-dicarboxylate (TDC) and oxalate (oxa) with the ions Eu^{3+} and Tb^{3+} under solvothermal condition[1], resulting in two three-dimensional (3D) Lanthanide-Organic Frameworks (LnOFs), named as $[Ln(TDC)(oxa)_{0.5}(H_2O)_2]H_2O$:. Ln = Eu **(1)** and Tb **(2)**.These luminescent compounds were adequately characterized. Comparing **(1)** and **(2)**, the lanthanide contraction effect is vividly demonstrated because of the Ln ions adopt different coordination environments, instead the same coordination modes of the ligands, leading to the different crystal structures.

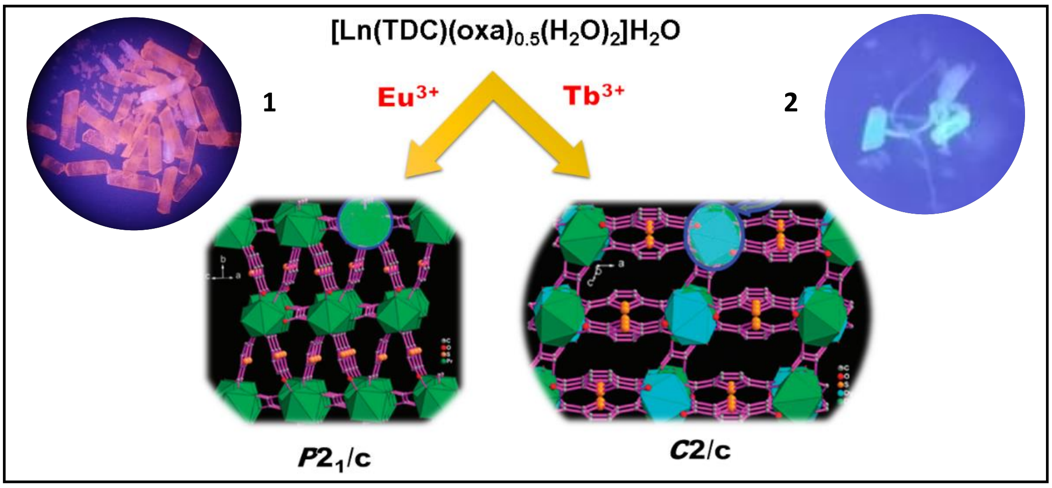

Figure 1. **(1)** is a europium-based compound such as to metal analogues LnOFs (Ln = Pr, Nd, Sm, and Gd) isostructural series crystallized in the space group *P*2$_1$/c and **(2)** is a terbium-based metal analogue belonging to the Dy and Er isostructural series crystallized in the *C*2/c space group., adapted from [1]

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References

[1] J. Xu et al., Crystal Growth and Design, 11, 2294 (2011).