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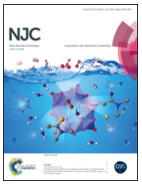

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Rare earth coordination dinuclear compounds constructed from 3,5-dicarboxypyrazolate and succinate intermetallic bridges †

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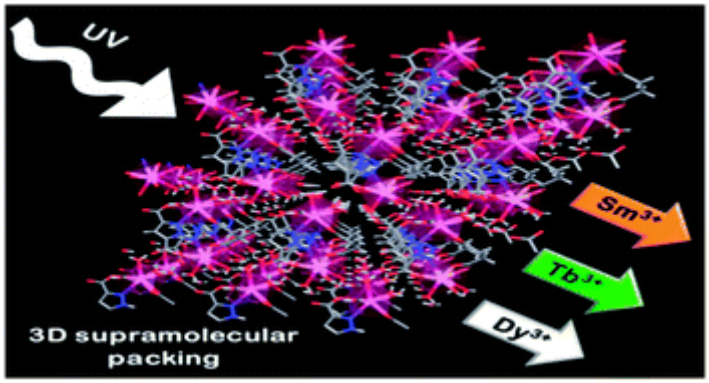
Abstract

In this paper we describe the synthesis of a new family of rare earth compounds of general formula $[RE_2(dcpz)_2(suc)(H_2O)_8]\cdot(H_2O)_{1.5}$, where RE = Y (**1**), La (**2**), Ce (**3**), Pr (**4**), Nd (**5**), Sm (**6**), Gd (**7**), Tb (**8**), Dy (**9**), Ho (**10**), Er (**11**), Tm (**12**) and Yb (**13**); dcpz = 3,5-dicarboxypyrazolate; suc = succinate. Single crystal X-ray diffraction studies showed that all the complexes are isostructural and crystallize in the triclinic system, space group $P\bar{1}$. They exist as dinuclear discrete molecules in which the metallic centers are linked together by dcpz and suc bridges. Hydrogen bonds between dimers give rise to a 3D **bcu** supramolecular network with topology $(4^{24}\cdot6^4)$. Solid-state photoluminescence studies revealed that the ligand-to-metal energy transfer mechanism is responsible for the visible emission of Sm (**6**), Tb (**8**) and Dy (**9**) compounds while for (**5**), near-infrared (1060 nm) emission was obtained by the direct excitation f orbitals in the Nd^{3+} ion. Magnetization measurements indicated antiferromagnetic interactions between the RE^{3+} ions, except Y^{3+} (**1**) and La^{3+} (**2**).



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