

MS30-O5 Prohibited and allowed crystal-crystal transformations in phosphinate based coordination polymers

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In the last years, several 1D, 2D and 3D coordination polymers based on diphosphinic acid (pcp= P, P'-diphenylmethylenediphosphate or pc₂p= P, P'-diphenylethylenediphosphate) have been reported by our group.[1] We have described in several cases, crystal-crystal transformation induced by temperature and by water. For instance the 3D network of [[Cu(bipy)(pc₂p)(H₂O)][1]2.5H₂O]_n (bipy = 4,4' bipyridine) rapidly transforms in the 2D slabs of [[Cu(bipy)(pc₂p)(H₂O)][1]3H₂O]_n [2]. We also found that the Metal Organic NanoTube (MONT) [[Cu₂(bpye)(pc₂p)₂][2.5H₂O]_n (bpye = 1,2-bis(4-pyridyl)ethane)) is converted in the 1D slab [Cu₂(bpye)(pc₂p)₂(H₂O)₂]_n in water while the isostructural MONT [[Cu₂(bipy)(pc₂p)₂][5H₂O]_n remain unaltered.[3] Here we report the different behavior for the 1D iso-structural [Ni(H₂O)₄(bipy)·pc₂p]_n, **1**, and [Ni(H₂O)₄(bpye)·pc₂p]_n, **2** coordination compounds. Only an amorphous anhydrous phase was obtained in the case of **1**. For **2**, the monohydrated [Ni(H₂O)(bpye)pc₂p]_n 3D phase, **3**, and the crystalline anhydrous [Ni(bpye)pc₂p]_n phase, **4**, have been isolated just varying the temperature. An interpretation based on supra-molecular interactions between the aromatic rings in competition with the other factors, like hydrogen bond, solvent and metal geometry will be discussed.

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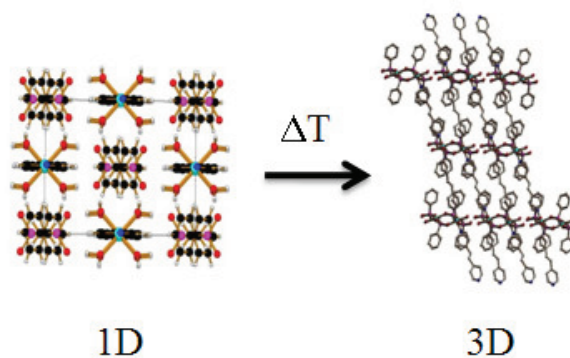


Figure 1. 1D to 3D transformation of the compound

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