

Solid state structural transformation of two-dimensional coordination polymers

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The solid state structural transformation with loss of 4,4'-bipyridine of the two-dimensional coordination polymer *phyllo*-diaquacobalt(II){4- α , α -xylenediylbis(phenylphosphinate)-4,4'-bipyridine} dihydrate **1** or *phyllo*-diaquanickel(II){4- α , α -xylenediylbis(phenylphosphinate)-4,4'-bipyridine} dihydrate **2** to *phyllo*-cobalt(II){4- α , α -xylenediylbis(phenylphosphinate)} **1'** or *phyllo*-nickel(II){4- α , α -xylenediylbis(phenylphosphinate)} **2'**, respectively, either by heating or, just for **1**, by solvent washing is presented. For **1** \rightarrow **1'**, the coordination polymer goes from light pink to deep blue, indicating a change in the Co^{II} coordination environment from octahedral to tetrahedral. For **2** \rightarrow **2'**, the color changed from light green to violet. In the single crystal structures of **1** and **2**, the bipyridine ligands are stacked along the crystallographic *x* direction. The loss of 4,4'-bipyridine from **1** and **2** to form **1'** and **2'**, respectively, was followed by thermogravimetric analysis and powder X-ray diffraction studies. Nitrogen adsorption studies show that **2'** from solvent washing is porous, with a Brunauer–Emmett–Teller surface area of 190 m² g⁻¹. The compounds were further characterized by infrared and Raman spectroscopy, diffuse reflectance spectroscopy, X-ray fluorescence spectroscopy, elemental analysis and scanning electron microscopy.

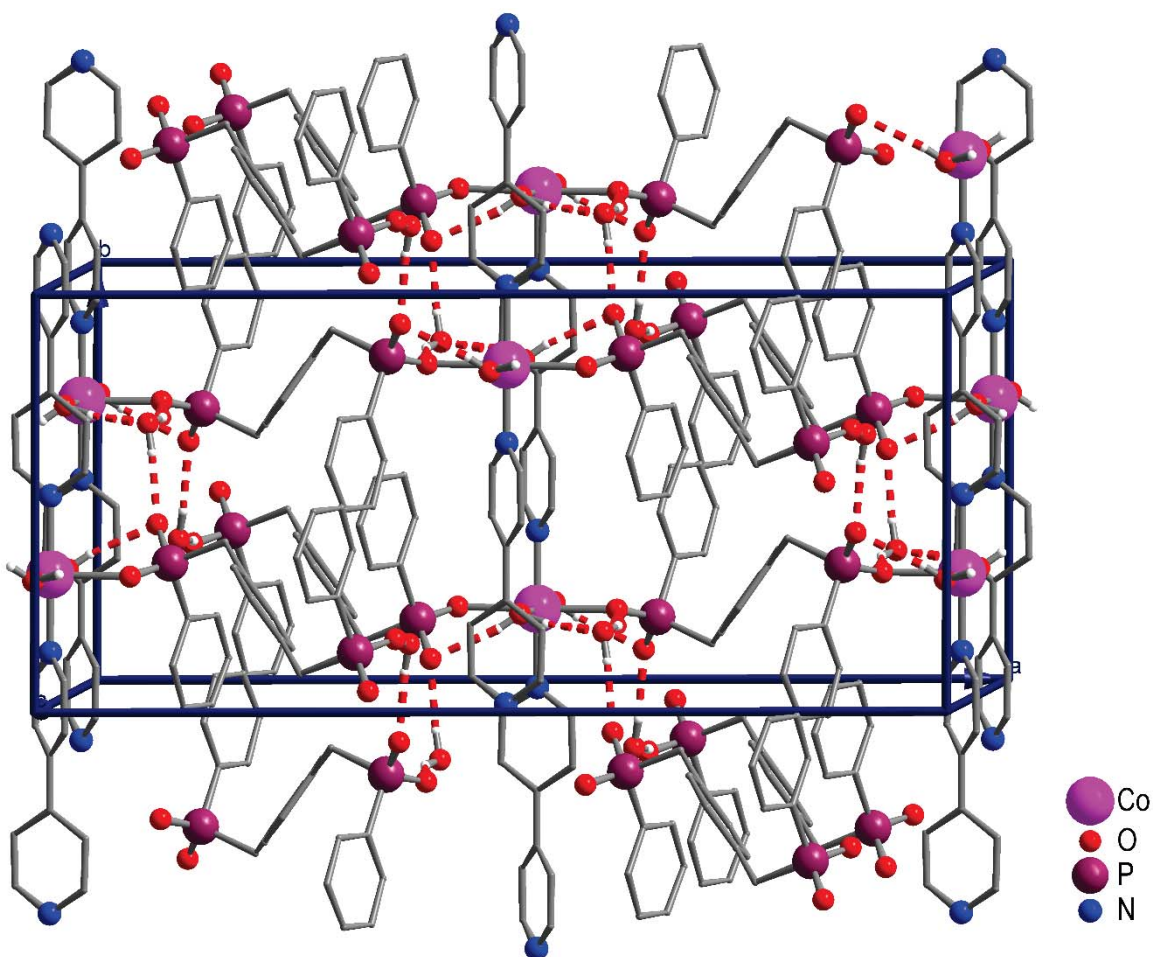


Figure 1. Simplified packing diagram of **1**, with carbon atoms shown as sticks and their hydrogen atoms omitted; view with *a* left, *b* up and *c* out of page.