**Solvent exchange leads to transformation from a 2D to 1D framework**

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**1. Introduction**

Much attention has been paid to the design and synthesis of metal-organic frameworks (MOFs) that can undergo a particular solid-state reaction with suitable guest molecules [1,2]. The solid-state reactions in MOFs sometimes result in colour changes due to host-guest interactions [2,3]. We have recently shown that the interactions between halogenated volatile organic compounds (VOCs) and the framework of [Co(34pba)(44pba)]n (where 34pba is 3-(pyridyn-4-yl)benzoate and 44pba is 4-(pyridyn-4-yl)benzoate) play a role in the selectivity and sorption properties of this MOF [3,4]. To further understand this phenomenon, we have extended the study to the square planar copper(II) ion and a related linker, 3-(pyridyn-4-ylmethyl)aminobenzoate (34paba).

**2. Results**

Room temperature synthesis afforded [Cu(34paba)2]n.DMA, in which the copper(II) ion is coordinated in 4-coordinate square-planar fashion to form a 2D MOF containing a disordered dimethylacetamide (DMA) guest molecule. Solvent exchange was attempted with solvents of different polarity and molecular size. The formation of new solvate phases was accompanied in some cases by visible colour changes. The new phases were characterized using powder X-ray diffraction (PXRD) and thermogravimetric analysis (TGA). At present, only the exchange of DMA by water could be characterized using single crystal X-ray diffraction, giving the structure [Cu(34paba)2]n.xH2O. In this structure, 1D coordination polymers of [Cu(34paba)]n surround water molecules in channels running parallel to the *c*-axis. The water molecules interact through hydrogen bonding between themselves and with the carboxylate oxygen of the 34paba linkers on adjacent coordination polymers. Further study of solvent exchange and sorption is underway.

**3. References**

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