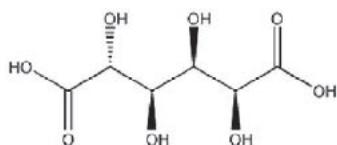


two distinct shapes. X-ray diffraction has shown these two crystals to be different forms (orthorhombic and cubic) of a cationic cluster of composition $[\text{Cu}_{21}(\text{sacc})_6(\text{phen})_{12}]^{12+}$. The penta-anionic saccharate adopts a different binding mode in each of the copper clusters. The spaces between the copper clusters are also of interest. The cubic form has a cell length of 73.7 Å and each unit cell contains a void with an approximate volume of 30,000 Å³.

I. Abrahams, B.F.; Moylan, M.D.; Orchard, S.D.; Robson, R., *Angew Chem Int Ed*, 2003, 42, 1848.



Keywords: coordination clusters, X-ray crystallography of coordination compounds, inorganic compounds

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A novel chiral metal-organic framework that catalyses asymmetric reaction in the chiral open space

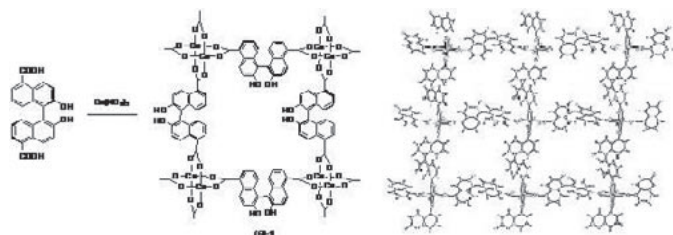
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A novel chiral metal-organic framework, $[\text{Cu}_2(5,5'\text{-BDA})_2]$ (R)-1 was synthesized by treating (R)-2,2'-dihydroxy-1,1'-binaphthalene-5,5'-dicarboxylic acid (5,5'-H2BDA) with Cu(II) ion, in which asymmetric ring opening reaction of epoxide with amine proceeds efficiently under solvent-free conditions.[1] In (R)-1, each Cu (II) ion is coordinated by four carboxylate oxygen atoms of (R)-1 and each pair of Cu(II) ions is bridged by four carboxylate groups to form 2D dinuclear square grid coordination networks with a Cu...Cu distance of 15.62(2) Å; the void space is filled by one MeOH and two H₂O guest molecules through hydrogen bonding.

[1]K. Tanaka, S. Oda, M. Shiro, *Chem. Commun.*, 2008, 820-822.



Keywords: inclusion chemistry, host-guest complexes, crystal structures

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The 1-D polymeric dimorphism of copper(I) thiocyanate complexes containing MTA ligand

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Two 1-D polymeric chains of $[\text{Cu}(\mu\text{-MTA})(\mu\text{-1,3-SCN})]_n$ (1) and $[\text{Cu}(\text{MTA})(\mu\text{-1,1,3-SCN})]_n$ (2) complexes (MTA = 3-mercapto-4-

methyl-4H-1,2,4-triazole and n = infinite) have been synthesized and characterized. The structure of complex(1) adopts a 1-D polymeric chain which consists of $[\text{Cu}(\mu\text{-MTA})_2(\mu\text{-SCN})(\mu\text{-NCS})]$ subunits, bridged by pairs of $\mu\text{-S}$ exocyclic thiones of two MTA molecules and by $\mu\text{-S}$ and $\mu\text{-N}$ atoms of thiocyanate groups end-to-end, $\mu\text{-1,3-SCN}$, producing a linear 1-D chain of double MTA and double SCN bridges along the c axis. Each Cu atom has a distorted pseudo-tetrahedral environment. It is coordinated by two $\mu_2\text{-S}$ atoms of the MTA ligands and one $\mu\text{-N}$ atom and one $\mu\text{-S}$ atoms from different thiocyanate groups. The 1-D chain structure of this complex is governed by the weak intra-molecular H-bonding interaction of N(1)-H(1)---N(4) and inter-molecular interactions of S(2)---N(2), generating 2-D network interactions in the ac-plane. The structure of complex(2) adopts a 1-D staircase-like chain containing $[\text{Cu}(\text{MTA})_2(\mu_2\text{-SCN})(\mu\text{-NCS})]$ subunits. Each Cu atom has a pseudo-tetrahedral geometry arising from one terminal thione-S atom of a MTA ligand, two $\mu_2\text{-S}$ atoms from two $\mu\text{-1,1,3-SCN}$ thiocyanato ligands and one $\mu\text{-N}$ atom from a third $\mu\text{-1,1,3-SCN}$ thiocyanate group. Two $\mu_2\text{-S}$ atoms bond to another Cu atom forming the Cu₂S₂ dimeric subunit. A pairs of anti-parallel thiocyanate groups bridges a pairs of Cu atoms to form an eight-membered Cu₂(SCN)₂ parallelogram macrocycle. This macrocycle shares the Cu-S edges with the Cu₂S₂ four-membered ring to form a 1-D staircase-like chain, $[\text{Cu}_2(\text{SCN})_2]_n$ lying parallel to the a-axis. The crystal packing of this complex is governed by inter-molecular H-bonding interactions of N(1)-H(1)---N(2) generating a 2-D network sheet in the ac-plane.

Keywords: copper(I) complexes, dimorphism, 3-mercapto-4-methyl-4H-1,2,4-triazole

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Novel coordination polymers generated from 2,2-dipyridyldisulfide and CuCl₂

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Coordination polymers have infinite frameworks constructed from metal ions and organic ligands. Coordination bonds play an important role in the construction of extended structures as well as other weak chemical bonds such as hydrogen bonds, van der Waals interactions, etc. This synthetic chemistry is like playing with building blocks, where one can control the coordination frameworks by modifying the geometries of the components. Generally, the formation process proceeds automatically and, therefore, is called a self-assembly process. In particular, crystalline coordination polymers are of great use because their structures can be exclusively determined by X-ray crystallographic methods, and have demonstrated that they have unique network motifs, structural diversity, and are available for physical and chemical properties ranging from magnetism, conductivity, and optical properties to porous functions such as adsorption, exchange, separation, and catalysis. We report here the supramolecular structure and thermal properties of two new compounds of copper complexes with 2,2'-Dipyridyldisulfide ligand.

Keywords: coordination polymers, disulfide, supramolecular chemistry