Trinodal Self-Penetrating Versus cds 3-Dimensional Networks Using Bis(3,2' : 6',3"-terpyridine) Building Blocks: the Solvent Makes the Difference

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Reactions between Co(NCS)2 and 24,24-[2,5-bis(cyclohexyloxy)-1,4-phenylene]di(13,22 :26,33-terpyridine) (1), 24,24-[2,5-bis(cyclohexylmethoxy)-1,4-phenylene]di(13,22 :26,33-terpyridine) (2), and 24,24-[2,5-bis(2-phenylethoxy)- 1,4-phenylene]di(13,22 :26,33-terpyridine) (3) under conditions of crystal growth by layering at room temperature lead to 3-dimensional nets with either a cds or trinodal self-penetrating topology depending upon the solvents (MeOH/C6H5Cl, MeOH/1,2-Cl2C6H5, or MeOH/CHCl3) used in the crystallization experiments. The cds network was found for [Co(NCS)2(1)]n.2nC6H4Cl2, [Co(NCS)2(2)]n.4nC6H4Cl2, and [Co(NCS)2(3)]n.2.5nC6H5Cl, while a trinodal selfpenetrating net was observed in [Co2(NCS)4(2)2]n.5.5nCHCl3.0.2r Preliminary structural data for single crystals from the reactions of Co(NCS)2 and 1 or Co(NCS)2 and 3 from MeOH/CHCl3 solvent combinations also evidenced the assemblies of trinodal self-penetrating nets. Both net topologies assemble from a combination of planar, 4-connecting metal and ligand nodes. The role of the solvent in directing the network type is investigated.
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