Title:	Coordination polymers of CdII and PbII derived from bipyridine–glycoluril: influence of metal-ion size and counter-ions
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Abstract:	Two new one-dimensional (1D) coordination polymers (CPs), namely catena-poly[[[aqua-cadmium(II)]-bis(μ-4b,5,7,7a-tetrahydro-4b,7a-epiminomethanoimino-6H-imidazo[4,5-f][1,10]phenanthroline-6,13-dione)] bis(perchlorate) dihydrate], {[Cd(C14H10N6O2)2(H2O)](ClO4)2·2H2O}n or {[Cd(BPG)2(H2O)](ClO4)2·2H2O}n, 1, and catena-poly[[lead(II)-bis-(μ-4b,5,7,7a-tetrahydro-4b,7a-epiminomethanoimino-6H-imidazo[4,5-f][1,10]phenanthroline-6,13-dione)] bis(perchlorate) dihydrate], {[Pb(C14H10N6O2)2](ClO4)2·2H2O}n or {[Pb(BPG)2](ClO4)2·2H2O}n, 2, have been synthesized using bipyridine–glycoluril (BPG; systematic name: 4b,5,7,7a-tetrahydro-4b,7a-epiminomethanoimino-6H-imidazo[4,5-f][1,10]phenanthroline-6,13-dione), a urea-fused tecton, in a mixed-solvent system. The CdII ion in 1 is heptacoordinated and the PbII ion in 2 is hexacoordinated, with the CdII ion adopting a pentagonal bipyramidal geometry and the PbII ion adopting a distorted octahedral geometry. Both CPs form infinite linear chain structures which are hydrogen bonded to each other leading to the formation of three-dimensional supramolecular network structures. Topological analysis of CPs 1 and 2 reveals that the structures exhibit 1D chain-like arrangements in an AB–AB sequence and shows platonic uniform 2-connected uninodal topologies. Furthermore, a comparative analysis of a series of structures based on the BPG ligand indicates that the size of the metal ion and the types of counter-ions used have a great influence on the resulting frameworks and properties.
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