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A One Dimensional Cd^{II} Coordination Polymer: Synthesis, Structure and Properties

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Abstract : One dimensional coordination polymer of Cd^{II} based on pyrazine (pz) and 3-nitrophthalic acid (3-nphaH$_2$), namely poly[[diaqua bis(3-nitro-2-carboxylato-1-carboxylic acid)(μ_2-pyrazine) cadmium(II)]dihydrate], {[Cd(3-nphaH)2(pz)(H$_2$O)$_2$]. 2H$_2$O}$_n$ was prepared and characterized. The asymmetric unit consists of one Cd^{II} center, two (3-nphaH)– anions, two halves of two crystallographically distinct pz ligands, two coordinated and two uncoordinated water molecules. The Cd^{II} cation is surrounded by four oxygen atoms from two (3-nphaH)– and two water molecules as well as two nitrogen atoms from two pz ligands in distorted octahedral geometry. Complicated hydrogen bonding network accompanied with N–O···π and C–O···π stacking interactions leads to formation of a 3D supramolecular network. Commonly, this kind of C–O–π and N–O···π interaction is detected in electron-rich CO/NO groups of (3-nphaH)– ligand and electron-deficient π-system of pyrazine.

Keywords : supramolecular chemistry, Cd coordination polymer, crystal structure, 3-nithrophethalic acid
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