Title:	Syntheses and structures of cobalt(II), nickel(II), and copper(II) complexes with N,N,N',N'-tetraalkylpyridine-2,6-dicarboxamides (O-daap) containing nitrate as the counter ion
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Abstract:	Reactions of M(NO3) 2 xH2O [M = Co(II), Ni(II), and Cu(II)] with N,N,N',N'-tetraalkylpyridine-2,6-dicarboxamides(O-daap) in CH3CN yield [Co(O-dmap)(NO 3) 2] (1), [Co(O-deap)(NO 3) 2] (2), [Co(O-dpap)(NO3)2] (3), [Ni(O-dmap)(H2O)3](NO3) 2] (4), [Ni(O-deap)(H2O)2(NO3)](NO3)] (5), [Cu(O-deap)(NO3) 2] (6), and [Cu(O-dpap)(NO3) 2](7). X-ray crystal structures of 1, 2, 4, 5, and 7 reveal that O-daap ligands coordinate tridentate to each metal, O-N-O, with nitrate playing a vital role in molecular and crystal structures of all the complexes. The coordination geometry in the two Co(II) complexes, 1 and 2, is approximately pentagonal bipyramidal with nitrate bonded in a slightly unsymmetrical bidentate chelating mode. [Ni(dmap)(H2O)3](NO3)2 (4) and [Ni(deap)(H2O)2(NO3)](NO3) (5) exhibit octahedral geometry, the former containing uncoordinated nitrate while the latter has one nitrate coordinated unidentate and the other nitrate outside the coordination sphere. The Cu(II) in [Cu(dpap)(NO3)2] (7) occupies a distorted square pyramidal geometry and is linked to two unidentate nitrates, although one nitrate is also involved in a weak interaction with the metal through its other oxygen. IR spectra and other physical studies are consistent with their crystal structural data. O-dmap = N,N,N',N'-tetramethylpyridine-2,6-dicarboxamides; O-deap = N,N,N',N'-tetraethylpyridine-2,6-dicarboxamides; and O-dpap = N,N,N',N'-tetraisopropylpyridine-2,6-dicarboxamides.
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