Two novel mononuclear and binuclear complexes of Ni(II) and Ca(II) atoms containing 4-hydroxy-pyridine-2,6-dicarboxylic acid, 2-aminopyrimidine, and 2,4,6-triamino-1,3,5-triazine ligands: Synthesis, X-ray crystal structure and thermal property

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The reactions of the 4-hydroxy-pyridine-2,6-dicarboxylic acid (for short H₃hypydc), 2-aminopyrimidine (for short 2-apym), and 2,4,6-triamino-1,3,5-triazine (for short tata) with nickel(II) chloride and calcium(II) nitrate in distilled water medium produce block green crystals of [Ni(hypydcH)₂(2-apym)(H₂O)₂]. H₂O (1) and block colourless crystals of (tataH)₂(tata)₂[Ca₂(hypydc)₂(H₂O)₆].2H₂O (2), respectively. Both crystal structures were thoroughly characterized by CHN elemental analyses, FTIR spectroscopy, TGA, and SXRD methods. 1 and 2 crystallize in the space group P̅T of the triclinic systems, where the final R values for 1 and 2 are 0.0222 for 3876 reflections collected and 0.0550 for 4113 reflections collected, respectively. The unit cell dimensions for 1 are: a = 8.5146(3) Å, b = 9.2662(4) Å, c = 10.1009(4) Å and α = 79.304(1)°, β = 65.206(1)°, γ = 84.064(1)° and for 2 are a = 8.6444(7) Å, b = 9.5486(8) Å, c = 14.4025(12) Å and α = 105.296(2)°, β = 95.745(2)°, γ = 108.241(2)°. The Ni(II) atom is coordinated by four oxygen and two nitrogen atoms of the (hypydc)₂⁻,(2-apym) and H₂O ligands and each Ca(II) atom is coordinated by six oxygen and one nitrogen atoms of the (hypydc)₃⁻ and H₂O ligands. The coordination geometry around Ni(II) and Ca(II) centres are distorted octahedron and distorted pentagonal bipyramid, respectively.

Key words: Ca(II) binuclear complex; 4-Hydroxy-pyridine-2,6-dicarboxylic acid; 2-Aminopyrimidine; X-ray Crystal structure; TGA.

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