Molecular Structure and Thermal Analysis of Potassium Hydrogenphthalate Monohydrate

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Single crystals of potassium hydrogenphthalate monohydrate, KHPhth(H_2O), were grown from aqueous solution using a slow cooling method and the structure was determined by X-ray diffraction analysis. The crystals belong to the monoclinic space group $P2_1/c$. Its unit cell parameters are as follows: a = 1.1235(1), b = 0.6689(1), c = 1.1998(2) nm, β = 98.85°, V = 0.8909(1) nm^3, D_c = 1.657 g/cm^3, Z = 4, F(000) = 456. The thermal decomposition of the complex was studied using differential scanning calorimetry (DSC), thermogravimetry-derivative thermogravimetry (TG-GTG) and FT-IR techniques. With a linear heat rate, the diagrams show three endothermic processes. RCOOK and K_2CO_3 are produced at 330 and 467 °C, respectively, according to FT-IR analysis.

Key words: Potassium Hydrogenphthalate Monohydrate, Molecular Structure, Thermal Analysis