Kristallzucht und Strukturaufklärung von $K_2[Pt(CN)_4Cl_2]$, $K_2[Pt(CN)_4Br_2]$, $K_2[Pt(CN)_4I_2]$ und $K_2[Pt(CN)_4Cl_2] \cdot 2H_2O$

Crystal Growth and Crystal Structure Determination of $K_2[Pt(CN)_4Cl_2]$, $K_2[Pt(CN)_4Br_2]$, $K_2[Pt(CN)_4I_2]$ and $K_2[Pt(CN)_4]Cl_2] \cdot 2H_2O$

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Crystals of $K_2Pt(CN)_4Br_2$, $K_2Pt(CN)_4I_2$ and $K_2Pt(CN)_4Cl_2 \cdot 2H_2O$ were grown, and their crystal structures have been determined from single crystal data. The structure of $K_2Pt(CN)_4Cl_2$ has been determined and refined from X-ray powder data. All compounds crystallize monoclinicly ($P2_1/c$; $Z = 2$), and $K_2Pt(CN)_4X_2$ with X = Cl, Br, I are isostructural. $K_2Pt(CN)_4Cl_2$: $a = 708.48(2)$; $b = 903.28(3)$; $c = 853.13(3)$ pm; $\beta = 106.370(2)^\circ$; $R_p = 0.064$ (N(hkl) = 423). $K_2Pt(CN)_4Br_2$: $a = 716.0(1)$; $b = 899.1(1)$; $c = 867.9(1)$ pm; $\beta = 106.85(1)^\circ$; $R(F)_{N'} = 0.026$ (N'(hkl) = 3757). $K_2Pt(CN)_4I_2$: $a = 724.8(1)$; $b = 914.5(1)$; $c = 892.1(1)$ pm; $\beta = 107.56(1)^\circ$; $R(F)_{N'} = 0.025$ (N'(hkl) = 2197). $K_2Pt(CN)_4Cl_2 \cdot 2H_2O$: $a = 763.76(4)$; $b = 1143.05(6)$; $c = 789.06(4)$ pm; $\beta = 105.18(1)^\circ$; $R(F)_{N'} = 0.021$ (N'(hkl) = 2281). Raman and infrared spectroscopy data are reported.

Key words: Dipotassium Tetracyanoplatinate(IV) Dihalides, Platinum Cyanides, Crystal Structures, X-Ray Scattering, Vibrational Spectroscopy