

35B Solid solutions**No. 35B-1 (A,B)(C,D)OPO₄ (A, B = H, NH₄, Na, K, Rb, Ag, Cs, Tl; C, D = Ti, V, Nb)**

1b	K _{0.84} (Ti _{0.92} Nb _{0.08})OPO ₄ : Space group: Pna2 ₁ -C _{2v} ⁹ . Transparent and colorless. Some characteristics: Table 35B-1-001, Table 35B-1-002, Table 35B-1-003, Table 35B-1-004, Table 35B-1-005. Θ_f , T_{melt} for K _{1-x} Cs _x TiOPO ₄ : Fig. 35B-1-001.	90Tho
2a	Rb _{1-x} Cs _x TiOPO ₄ (ceramics) sintering temperature: 900 °C. Single phase was obtained for 0 ≤ x ≤ 0.2. For 0.3 ≤ x ≤ 0.4, both KTP and CsTiOPO ₄ (cubic pyrochlore) structures were mixed. K(Ti,Nb)OPO ₄ : Crystal growth by flux method. (Rb,Cs)TiOPO ₄ : Ceramics. Sintering temperature: 900 °C. (K,Ag)TiOPO ₄ : Crystal growth by ion exchange of KTiOPO ₄ using molten AgNO ₃ . K(Ti,V)OPO ₄ : Crystal growth by hydrothermal method. (Rb,Na)TiOPO ₄ : Solid state reaction at 950 °C. (K,Rb)TiOPO ₄ : Crystal growth by flux method. (K,Rb)TiOPO ₄ : Ion exchange. (K,Na)TiOPO ₄ : Crystal growth by flux method. (K,Tl)TiOPO ₄ : Crystal growth by flux method. (K,Tl)TiOPO ₄ : Ion exchange.	90Vor 90Tho 90Vor 89Phi 90Phi 91Cre1 94Tho, 94Wan 94Tho 94Loi 94Vor 87Bie
b	K _{0.84} (Ti _{0.92} Nb _{0.08})OPO ₄ : The crystal morphology was not similar to the KTP habit.	90Tho
3a	Ag _{0.87} K _{0.13} TiOPO ₄ : $a = 12.534 \text{ \AA}$, $b = 6.294 \text{ \AA}$, $c = 10.524 \text{ \AA}$, $V = 830.23 \text{ \AA}^3$. NH ₄ TiOPO ₄ : $a = 12.822(1) \text{ \AA}$, $b = 6.2835(5) \text{ \AA}$, $c = 10.5978(8) \text{ \AA}$, $V = 853.81 \text{ \AA}^3$. NH ₄ H(TiOPO ₄) ₂ : $a = 12.9154(1) \text{ \AA}$, $b = 6.4946(1) \text{ \AA}$, $c = 10.5886(1) \text{ \AA}$, $V = 888.18 \text{ \AA}^3$. K _{0.5} Na _{0.5} TiOPO ₄ : $a = 12.75613(7) \text{ \AA}$, $b = 10.60426(6) \text{ \AA}$, $c = 6.31869(4) \text{ \AA}$, $V = 854.725(6) \text{ \AA}^3$. K _{0.5} Rb _{0.5} TiOPO ₄ : $a = 12.8961(10) \text{ \AA}$, $b = 10.5929(8) \text{ \AA}$, $c = 6.4299(5) \text{ \AA}$, $V = 878.4(2) \text{ \AA}^3$. K _{0.42} Na _{0.58} TiOPO ₄ : $a = 12.7298(21) \text{ \AA}$, $b = 6.3074(4) \text{ \AA}$, $c = 10.6073(13) \text{ \AA}$, $V = 851.7 \text{ \AA}^3$. K _{0.7} Rb _{0.3} TiOPO ₄ : $a = 12.840(8) \text{ \AA}$, $b = 6.460(3) \text{ \AA}$, $c = 10.610(5) \text{ \AA}$. K _{0.86} Rb _{0.14} TiOPO ₄ : $a = 12.8500(8) \text{ \AA}$, $b = 6.4136(3) \text{ \AA}$, $c = 10.5912(7) \text{ \AA}$. K _{0.59} Tl _{0.41} TiOPO ₄ : $a = 12.579(2) \text{ \AA}$, $b = 6.434(1) \text{ \AA}$, $c = 10.588(2) \text{ \AA}$. Unit cell parameters: Table 35B-1-003, Table 35B-1-004, Table 35B-1-005, Table 35B-1-006, Table 35B-1-007; Fig. 35B-1-002. See also Table 35B-1-001, Table 35B-1-002 in 1b.	89Phi 88Edd 88Edd 91Cre1 91Cre2 92Cre 94Wan 94Tho 94Vor
b	Crystal structure: Table 35B-1-008, Table 35B-1-009, Table 35B-1-010, Table 35B-1-011, Table 35B-1-012, Table 35B-1-013, Table 35B-1-014, Table 35B-1-015, Table 35B-1-016, Table 35B-1-017; Fig. 35B-1-003, Fig. 35B-1-004. See also Table 35A-6-006, Table 35A-6-007; Fig. 35A-6-008 in No. 35A-6, Table 35A-21-001 in No. 35A-21.	
4	Thermal expansion coefficients: Table 35B-1-018.	
5a	Dielectric constant: Table 35B-1-019, Table 35B-1-020; Fig. 35B-1-005, Fig. 35B-1-006, Fig. 35B-1-007, Fig. 35B-1-008, Fig. 35B-1-009.	
7a	KTiOPO ₄ -RbTiOPO ₄ : Excitation of surface acoustic waves.	91Bur
8a	Elastic stiffnesses: Table 35B-1-018.	

35 KTiOPO_4 (KTP) family

9a	Refractive index: Table 35B-1-020, Table 35B-1-021, Table 35B-1-022; Fig. 35B-1-010, Fig. 35B-1-011. Transmission: Fig. 35B-1-012, Fig. 35B-1-013, Fig. 35B-1-014.	
c	Piezoelectric constants: Table 35B-1-023.	
e	$\text{NH}_4\text{H}(\text{TiOPO}_4)_2$: SHG signal 140 times that of quartz.	88Edd
11	Electric conductivity: Fig. 35B-1-015. Luminescence: see Fig. 35A-6-085 in No. 35A-6.	
13a	^{23}Na NMR: Table 35B-1-024. ^{31}P NMR: Fig. 35B-1-016, Fig. 35B-1-017.	
16	$\text{K}_{1-x}\text{Ti}_x\text{TiOPO}_4$:KTP waveguide by thallium nitrate molten salt. $\text{K}_{1-x}\text{Cs}_x\text{TiOPO}_4$:KTP waveguide by cesium nitrate molten salt. $\text{K}_{1-x}\text{Rb}_x\text{TiOPO}_4$:KTP waveguide by rubidium nitrate molten salt. KTiOPO_4 :Rb (ion exchanged). Nonlinear directional coupler based on KTiOPO_4 :Rb waveguides.	87Bie 87Bie 87Bie 92Bur