

No. 35A-20 KTiOAsO₄, Potassium titanyl arsenate (KTA)*(M* = 241.90)

| 1a | Ferroelectricity in KTiOAsO ₄ was suggested by dielectric anomaly by Cheng et al. in 1991. Hysteresis loop has not been observed. | 91Che | | | | | | | | | | | | | | | |
|----------------|---|--|----|---|-------|-----|---|----------------|--------------|--------------|-------------|---|-----------------------------------|---------------|-----|--|-------|
| b | <table> <tr> <th>phase</th><th>II</th><th>I</th></tr> <tr> <th>state</th><td>(F)</td><td>P</td></tr> <tr> <th>crystal system</th><td>orthorhombic</td><td>orthorhombic</td></tr> <tr> <th>space group</th><td>Pna2₁–C_{2v}⁹</td><td>Pnan–C_{2h}⁶</td></tr> <tr> <th>Θ [°C]</th><td colspan="2">861</td></tr> </table> | phase | II | I | state | (F) | P | crystal system | orthorhombic | orthorhombic | space group | Pna2 ₁ –C _{2v} ⁹ | Pnan–C _{2h} ⁶ | Θ [°C] | 861 | | 91Che |
| phase | II | I | | | | | | | | | | | | | | | |
| state | (F) | P | | | | | | | | | | | | | | | |
| crystal system | orthorhombic | orthorhombic | | | | | | | | | | | | | | | |
| space group | Pna2 ₁ –C _{2v} ⁹ | Pnan–C _{2h} ⁶ | | | | | | | | | | | | | | | |
| Θ [°C] | 861 | | | | | | | | | | | | | | | | |
| | $\rho = 3.50(2) \text{ kg m}^{-3}$; $\rho_{\text{x}} = 3.484(2) \text{ kg m}^{-3}$. | 91Che | | | | | | | | | | | | | | | |
| | Transparent and colorless. | 91Che | | | | | | | | | | | | | | | |
| 2a | Crystallites. Crystal growth: flux seeding method; solute: TiO ₂ –KAsO ₃ , solvent: K ₄ As ₂ O ₇ –K ₂ WO ₄ –As ₂ O ₅ ; see also Crystal growth: flux: K ₆ As ₄ O ₁₃ . Hydrothermal growth. $T = 600 \text{ }^{\circ}\text{C}$, $p = 2040 \text{ atm}$. Preparation by sol-gel method. | 86EIB 93Luo 94May 94Che 93Bel 94Abr | | | | | | | | | | | | | | | |
| b | Crystal habit: Fig. 35A-20-001. | | | | | | | | | | | | | | | | |
| 3a | Unit cell parameters: $a = 13.138(2) \text{ \AA}$, $b = 6.582(1) \text{ \AA}$, $c = 10.787(2) \text{ \AA}$. See also Table 35B-1-020 in No. 35B-1. | 94May | | | | | | | | | | | | | | | |
| b | $Z = 8$. Crystal structure: Table 35A-20-001, Table 35A-20-002, Table 35A-20-003, Table 35A-20-004, Table 35A-20-005, Table 35A-20-006, Table 35A-20-007, Table 35A-20-008, Table 35A-20-009; Fig. 35A-20-002, Fig. 35A-20-003; see also Table 35A-6-007 in No. 35A-6, Table 35A-21-001 in No. 35A-21, Table 35A-22-002 in No. 35A-22, Table 35B-2-002 in No. 35B-2. | 86EIB | | | | | | | | | | | | | | | |
| 4 | Thermal expansion: Table 35A-20-010, Table 35A-20-011; Fig. 35A-20-004, Fig. 35A-20-005. | | | | | | | | | | | | | | | | |
| 5a | Dielectric constant: Fig. 35A-20-006. | | | | | | | | | | | | | | | | |
| 9a | Refractive index: see Table 35B-1-020 in No. 35B-1 and Table 35A-6-013 in No. 35A-6. Optical transmission: see Fig. 35A-6-037 in No. 35A-6. | | | | | | | | | | | | | | | | |
| b | Electrooptic coefficient: $r_{13} = 15(1) \text{ pm V}^{-1}$, $r_{23} = 21(1) \text{ pm V}^{-1}$, $r_{33} = 40(1) \text{ pm V}^{-1}$. See also Table 35A-6-018 in No. 35A-6. | 89Bie | | | | | | | | | | | | | | | |
| e | Second harmonic and sum-frequency generation: see Optical parametric oscillation: see Optical parametric frequency conversion properties: see Nonlinear optical properties: Fig. 35A-20-007; see also Table 35A-6-018 in No. 35A-6. | 94Kat 93Pow 94Bos, 92Jan | | | | | | | | | | | | | | | |
| 10a | Raman scattering: Table 35A-20-012; Fig. 35A-20-008, Fig. 35A-20-009; see also Table 35A-6-023 in No. 35A-6. | | | | | | | | | | | | | | | | |

35 KTiOPO₄ (KTP) family

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| 11 | Electrical conductivity: see Fig. 35A-6-084 in No. 35A-6. | |
| | Luminescence: see | 91Bla |
| | Luminescence of ions with d^{10} configuration: see | 92Ham |
| 16 | Laser damage “grey tracks” formation: see | 92Loi1 |
| | Effect of small amount of Fe, Sc and In ion doping: see | 93Che |
| | Continuously tunable mid-infrared radiation from 3.0 to 5.3 μm by difference frequency mixing: see | 94Kun |