

**No. 43A-12 K<sub>2</sub>Cd<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>, Potassium cadmium sulfate**  
 (*M* = 591.21)

1a	Dielectric anomaly was not found below RT. A phase transition was found above RT by Abrahams et al. in 1978.	77Hik 78Abr															
b	<table><tr><td>phase</td><td>II</td><td>I</td></tr><tr><td>state</td><td></td><td>P</td></tr><tr><td>crystal system</td><td>orthorhombic</td><td>cubic</td></tr><tr><td>space group</td><td>P2<sub>1</sub>2<sub>1</sub>2<sub>1</sub>–D<sub>2</sub><sup>4</sup> a)</td><td>P2<sub>1</sub>3–T<sup>4</sup></td></tr><tr><td>Θ [K]</td><td colspan="2">432</td></tr></table> Transition temperature: 430.7(2) K. See also Table 43A-13-002 in No. 43A-13. Color: transparent and colorless. ρ = 3.70(1) · 10 <sup>3</sup> kg m <sup>–3</sup> ; ρ <sub>X</sub> = 3.679 · 10 <sup>3</sup> kg m <sup>–3</sup> . Phase diagram of K <sub>2</sub> SO <sub>4</sub> –CdSO <sub>4</sub> system: Fig. 43A-12-001.	phase	II	I	state		P	crystal system	orthorhombic	cubic	space group	P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub> –D <sub>2</sub> <sup>4</sup> a)	P2 <sub>1</sub> 3–T <sup>4</sup>	Θ [K]	432		78Abr          a)77Abr  94Cao    77Abr
phase	II	I															
state		P															
crystal system	orthorhombic	cubic															
space group	P2 <sub>1</sub> 2 <sub>1</sub> 2 <sub>1</sub> –D <sub>2</sub> <sup>4</sup> a)	P2 <sub>1</sub> 3–T <sup>4</sup>															
Θ [K]	432																
2a	Crystal growth: Bridgman and Czochralski techniques.	77Nas															
3a	Unit cell parameters: <i>a</i> = 10.2082(2) Å, <i>b</i> = 10.2837(3) Å, <i>c</i> = 10.1661(1) Å at 289.2 K.	77Abr															
b	Structural parameters: Table 43A-12-001, Table 43A-12-002, Table 43A-12-003, Table 43A-12-004, Table 43A-12-005. Crystal structure: Fig. 43A-12-002, Fig. 43A-12-003, Fig. 43A-12-004, Fig. 43A-12-005, Fig. 43A-12-006.																
4	Thermal expansion: Fig. 43A-12-007, Fig. 43A-12-008, Fig. 43A-12-009, Fig. 43A-12-010.																
5a	Dielectric constant: Fig. 43A-12-011; see also Fig. 43A-2-003 in No. 43A-2.																
6a	Heat capacity: Fig. 43A-12-012, Fig. 43A-12-013. DSC measurements; P <sub>21</sub> 2 <sub>1</sub> 2 <sub>1</sub> to P <sub>21</sub> 3 transition temperature: Θ = 430.7(2) K. Transition enthalpy: 2.19(3) kJ mol <sup>–1</sup> . Transition entropy: see Table 43A-13-002 in No. 43A-13.	94Cao															
7a	Electromechanical coupling factors: Table 43A-12-006. Piezoelectric constants: Table 43A-12-006.																
8a	Elastic compliances: Table 43A-12-007; Fig. 43A-12-014. Elastic stiffnesses: Fig. 43A-12-015.																
b	Reorientation of axes from <i>abc</i> to <i>bca</i> was observed under the applied stress of 5 MPa normal to (010).	77Abr															
9a	Refractive indices: <i>n</i> <sub>α</sub> = 1.5882, <i>n</i> <sub>β</sub> = 1.5902, <i>n</i> <sub>γ</sub> = 1.5912, 2 <i>V</i> = 102° at RT, λ = 632.8 nm. Temperature dependence: Fig. 43A-12-016. Wavelength dependence: Fig. 43A-12-017. Birefringence: Fig. 43A-12-018, Fig. 43A-12-019, Fig. 43A-12-020; see also  b Electrooptic effect: Fig. 43A-12-021, Fig. 43A-12-022, Fig. 43A-12-023. c Piezooptic effect: Fig. 43A-12-024. d Optical activity: Table 43A-12-008, Table 43A-12-009; Fig. 43A-12-025, Fig. 43A-12-26, Fig. 43A-12-27, Fig. 43A-12-28.	84Ber   															

### 43 Langbeinite ( $\text{K}_2\text{Mg}_2(\text{SO}_4)_3$ ) family

10a	Raman scattering: Table 43A-12-010, Table 43A-12-011; Fig. 43A-12-029; see also	83Moi
11	Thermoluminescence: Fig. 43A-12-030, Fig. 43A-12-031; see also	86Des
13b	ESR of $\text{Fe}^{3+}$ : see	92Bot
14	X-ray diffraction intensity: Fig. 43A-12-032.	
15a	Domain structure observed by an optical microscope: see	88Bil