No. 41A-2 $KLiSO_4$, Potassium lithium sulfate

(M = 142.10)

1a Dielectric anomaly associated with a phase transition was observed in $KLiSO_4$ and the possibility of ferroelectricity was discussed by Ando in 1962. — 62And

b

phase	VI	V	IV	III	II	I	
crystal system	monoclinic	hexagonal	hexagonal	hexagonal	orthorhombic	hexagonal	
space group	$P2_1$–C_2^2 [a]	$P6_3mc$–C_{6v}^4 [b] $P31c$–C_{3v}^4 [e]	$P6_3$–C_6^6 [c]		$Pcmn$–D_{2h}^{16} [d] $Pc2_1n$–C_{2v}^9 [d]	$P6_3mc$–C_{6v}^4 [d] $P6_3/mmc$–D_{6h}^4 [d]	[a] 89Gli [b] 80Ban [c] 25Bra [d] 88Pie

	VI–V	V–IV	IV–III	III–II	II–I	
Θ [K]	190	245 [d] 201 [b] 242 [b]	333	711 [f] 708 [g] 712 [d]	948 [f] 942 [g] 935 [d]	[e] 88Zha [f] 85Cac [g] 86Sor

Pyroelectric axis || [001]. — 25Bra
Transparent. — 25Bra
T_{melt} = 998 K. — 85Cac
$\rho_X = 2.397 \cdot 10^3$ kg m^{-3}. — 88Zha

2a Crystal growth: slow evaporation of aqueous solution of 2 $KHSO_4$ and Li_2CO_3. — 62And
Amorphous state at $p \geq 1.2 \cdot 10^{10}$ Pa.

3a Unit cell parameters:
Phase I: a = 5.295 Å, c = 8.706 Å at 950 K. — 88Pie
Phase II: See — 88Pie
Phase III: a = 5.160(3) Å, c = 8.633(4) Å at 398 K. — 85Sch
a = 5.160(3) Å, c = 8.634(4) Å at 568 K. — 85Sch
Phase IV: a = 5.147(3) Å, c = 8.633(4) Å at 293 K. — 85Sch
Phase V: a = 5.129 Å, c = 8.639 Å at 200 K. — 88Zha
Phase VI: a = 5.134(3) Å, b = 5.102(2) Å, c = 8.646(5) Å, γ= 119.13(4)° at 160 K. — 89Gli

b Crystal structure of phase III and phase IV: Table 41A-2-001, Table 41A-2-002.
Crystal structure of phase IV: Table 41A-2-003; Fig. 41A-2-001, Fig. 41A-2-002.
Z = 2 in phase V. — 88Zha
Crystal structure of phase V (200K): Fig. 41A-2-003, Fig. 41A-2-004.
Fractional coordinates and temperature factors: Table 41A-2-004.
Interatomic distances: Table 41A-2-005.
r.m.s. displacement: Table 41A-2-006; Fig. 41A-2-005.

4 Tensile spontaneous strain and linear thermal expansion coefficient were measured at different heating rates. — 86Kan
Temperature dependence of unit cell parameters a and c: Fig. 41A-2-006.

5a Temperature dependence of dielectric constants: Fig. 41A-2-007, Fig. 41A-2-008, Fig. 41A-2-009.
Phase diagram with respect to p: Fig. 41A-2-010.
$d\Theta/dp$: see — 85Fuj2

c Spontaneous polarization: see — 84Fuj

d Temperature dependence of pyroelectric coefficient: Fig. 41A-2-011.

6a Heat capacity: Fig. 41A-2-012, Fig. 41A-2-013.

b Thermal conductivity: Fig. 41A-2-014.

7a	Temperature dependence of piezoelectric constants: see	82Mro
8a	Temperature dependence of inverse of elastic compliance: Fig. 41A-2-015. Elastic stiffness constant determined by ultrasonic measurement: Fig. 41A-2-016, Fig. 41A-2-017, Fig. 41A-2-018. Elastic stiffness constant determined by Brillouin scattering: Table 41A-2-007, Table 41A-2-008; Fig. 41A-2-019, Fig. 41A-2-020. See also	 83Dro, 86Pim
9a	Reflective index: $n_o = 1.4738$ for $\lambda = 546.1$ nm. Birefringence: $\Delta n = 0.0006$ for $\lambda = 546.1$ nm. Temperature dependence of birefringence of (100) plate: Fig. 41A-2-021. See also Optical absorption due to Cu^{2+} [a]), Mn^{2+} [b]), VO^{2+} [c]), Cr^{3+} [d]) ions.	30Wes 64Smi 85Iva [a]) 84Lak [b]) 83Lak1 [c]) 83Lak2 [d]) 82Aly
c	Elastooptic constants at RT: Table 41A-2-009. See also	 90Cza
d	Infrared absorption for A and E_1 modes: Fig. 41A-2-022. Electrooptic constant: $\vert r_{13} - r_{33} \vert = 1.60(16) \cdot 10^{-12}$ mV^{-1} for $\lambda = 546$ nm. Temperature dependence of electrooptic coefficient at 632.8 nm: Fig. 41A-2-023. Optical rotatory power: $\rho = 41(2) \cdot 10^2$ m^{-1} for $\lambda = 546$ nm. Optical rotatory power: Table 41A-2-010. Optical activity: see Nonlinear optical susceptibilities: $d_{31}/d_{36}^{KDP} = 0.8$, $d_{33}/d_{36}^{KDP} = 1.5$ at RT for $\lambda = 694.3$ nm.	 64Smi 64Smi 79Per 68Son
10a	Raman scattering spectra: Table 41A-2-011, Table 41A-2-012; Fig. 41A-2-024 Fig. 41A-2-025..	
b	Brillouin scattering: temperature dependence of ρv^2 for the longitudinal acoustic wave propagating along [100] direction: Fig. 41A-2-026, along [001] direction: Fig. 41A-2-027. For a longitudinal acoustic wave propagating along [001]: see	 89Mro, 87Pim, 86Pim, 83Dro
13a	NMR: temperature dependence of the frequency separation of ^7Li line: Fig. 41A-2-028. NMR of ^{39}K line: Fig. 41A-2-029, Fig. 41A-2-030, Fig. 41A-2-031, Fig. 41A-2-032, Fig. 41A-2-033 . Spin-lattice relaxation time of ^{39}K: Fig. 41A-2-034.	
b	ESR of SO_4^-: Table 41A-2-013. ESR of Cu^{2+}: Table 41A-2-014. ESR of Tl^{2+}: Fig. 41A-2-035, Fig. 41A-2-036, Fig. 41A-2-037, Fig. 41A-2-038, Fig. 41A-2-039, Fig. 41A-2-041. ESR of CrO_4^{3-} : Fig. 41A-2-040. See also	 86YuJ1

	For doped SeO_4^-, see	85Mae
	ESR of Cu^{2+} [a]), Tl^{2+} [b]), Cr^{3+} [c]), NH_3^+ [d]):	[a]) 84Lak [b]) 86Efi [c]) 86Con [d]) 86Mur
	See also	86YuJ2
14a	Neutron diffraction: Fig. 41A-2-042, Fig. 41A-2-043, Fig. 41A-2-044, Fig. 41A-2-045.	
b	Dispersion relation of acoustic mode in phase IV: Fig. 41A-2-046, Fig. 41A-2-047, Fig. 41A-2-048. Diffuse scattering at RT: see	94Wel
15a	Domain structure in the temperature range 33...300 K: see Wedge-shaped and striped domains were observed by polarized light. Domains were observed by neutron diffraction study in the temperature range 15...189 K.	85Cac 86Sor 92Sav