No. 41A-3 $RbLiSO_4$, Rubidium lithium sulfate

(M = 188.47)

1a Ferroelectric activity in $RbLiSO_4$ was discovered between 166 and 188 °C by Shiroishi et al. in 1976. 76Shi

b

phase	VI	V	IV	III	II *)	I
state	P	F				P
crystal system	monoclinic	monoclinic	monoclinic	ortho-rhombic		ortho-rhombic
space group	$P112_1/n - C_{2h}^5$	$P11n - C_s^2$	$P2_1/c11 - C_{2h}^5$			$Pmcn - D_{2h}^{16}$
Θ [°C]	165	184	199.7	200.1	201.5	

See also 87Kun, 79Kru, 86Ste

P_s || [100]. 76Shi

Colorless. 76Shi

T_{melt} = 740 °C.

*) A long period structural modulation was found in phase II. A modulation wave vector is $k_z = (2/5 - \delta)\ c_0^*$. c_0^* is referred to the unit cell of phase I.

2a Crystal growth: fusion method or water solution method from stoichiometric mixtures of Rb_2SO_4 and $Li_2SO_4 \cdot H_2O$. 76Shi

b Crystal forms: pseudohexagonal. 76Shi

3a Unit cell parameters: 87Kun
Phase I: a = 5.3041 Å, b = 9.1744 Å, c = 8.7012 Å at 220 °C.
Phase IV: a = 5.3051 Å, b = 9.1444 Å, c = 17.4132 Å, α = 89.992° at 190 °C.
Phase V: a = 5.3161 Å, b = 9.1621 Å, c = 43.6893 Å, γ = 90.011° at 170 °C.
Phase VI: a = 5.3031 Å, b = 9.1342 Å, c = 8.7172 Å, γ = 89.902° at 160 °C.

b Z = 4 [a]) in phase I, Z = 8 [a]) in phase IV, Z = 20 [b]) in phase V, Z = 4 [c]) in phase VI. [a]) 87Kun [b]) 86Ste [c]) 80Tan

Crystal structure:
Phase I: Table 41A-3-001; Fig. 41A-3-001.
Phase IV: Table 41A-3-002; Fig. 41A-3-002.
Phase V: Table 41A-3-003; Fig. 41A-3-003;
Phase VI: Table 41A-3-004; Fig. 41A-3-004.
See also 87Kun, 86Ste

Temperature dependence of mean-square amplitude of thermal vibration: Fig. 41A-3-005.
Modulation structures of phases IV and V: Fig. 41A-3-006.
Bond lengths and bond angles: Table 41A-3-005.
See also 86Ste

5a Dielectric constant: Fig. 41A-3-007, Fig. 41A-3-008, Fig. 41A-3-009.
Dielectric loss tangent: Fig. 41A-3-010.
See also 76Shi, 79Shi

Θ-E phase diagram: Fig. 41A-3-011.

c	Coercive field: $2.9 \cdot 10^2$ kV · m^{-1} at 168 °C. Spontaneous polarization, remanent polarization, coercive field and critical field: Fig. 41A-3-012, Fig. 41A-3-013. See also	79Shi
6a	Differential scanning calorimetry: see	86Kur
9a	Infrared spectrum at RT: see	85Ram
10a	Raman spectrum at RT: see	85Ram
11	Specific resistivity: $\approx 1 \cdot 10^8$ Ωm along the *a* axis at 205 °C.	76Shi
14a	X-ray diffraction: Time development of X-ray diffraction profile: Fig. 41A-3-014. Modulation structure: Fig. 41A-3-015. Diffraction intensity of super structure: Fig. 41A-3-016.	