

No. 1C-a10 NaNbO₃–LiNbO₃

1b	Phase diagram: Fig. 1C-a10-001, Fig. 1C-a10-002. Space group: $Pc2_1b - C_{2v}^5$ at 295 K (F(O) phase).	84von
3a	Unit cell parameters of (Na _{0.98} Li _{0.02})NbO ₃ : $a = 5.494(3) \text{ \AA}$, $b = 15.461(6) \text{ \AA}$, $c = 5.551(3) \text{ \AA}$ at 295 K. Lattice parameters: Fig. 1C-a10-003.	84von
b	Atomic coordinate: Table 1C-a10-001.	
4	Thermal distortion: Fig. 1C-a10-004.	
5a	Dielectric constant: Figs. 1C-a10-005...1C-a10-009.	
c	Spontaneous polarization: Fig. 1C-a10-010.	
d	Pyroelectricity: see	83Sad
7a, 8a	Electromechanical property: Fig. 1C-a10-011.	
9a	Birefringence: Fig. 1C-a10-012.	

Table 1C-a10-001. $(\text{Na}_{0.98}\text{Li}_{0.02})\text{NbO}_3$. Atomic coordinates and temperature parameters at 295 K [84von]. Temperature parameters b_{ij} are defined by Eq. (b) in Introduction.

Atom	x	y	z	b_{11}	b_{22}	b_{33}	b_{12}	b_{13}	b_{23}
Na(1)	0.2438(10)	0.1204(10)	0.7149(11)	1.28(20)	0.23(20)	1.23(16)	0.23(16)	1.02(10)	0.50(20)
Na(2)	0.2415(8)	0.3728(11)	0.7732(18)	0.80(20)	0.24(4)	0.56(10)	0.0(1)	0.0(1)	0.0(1)
Nb(1)	0.2565(1)	0	0.2232(1)	0.24(4)	0.38(5)	0.04(3)	0.07(3)	−0.09(1)	0.00(4)
Nb(2)	0.2540(2)	0.2502(2)	0.2292(3)	0.48(5)	0.30(5)	0.35(5)	0.00(2)	0.24(2)	0.00(4)
O(1)	0.4590(10)	0.0054(10)	0.5506(12)	1.10(2)	3.5(5)	0.1(1)	0.5(3)	0.0(1)	0.6(2)
O(2)	0.0327(10)	−0.0132(10)	−0.0186(16)	1.6(3)	3.2(6)	0.8(1)	1.5(3)	1.1(2)	0.0(2)
O(3)	0.0331(11)	0.2645(5)	0.0358(10)	0.2(1)	0.4(1)	0.1(1)	0.0(1)	0.0(1)	0.1(1)
O(4)	0.5364(10)	0.2299(5)	0.4603(10)	0.1(1)	0.1(1)	0.1(1)	0.0(1)	−0.02(1)	0.0(1)
O(5)	0.3124(12)	−0.1273(9)	0.2738(13)	0.8(2)	0.4(2)	0.1(1)	0.0(1)	0.0(1)	0.1(2)
O(6)	0.1871(12)	0.1229(12)	0.2649(12)	1.0(2)	0.2(1)	0.6(1)	0.0(1)	0.0(1)	0.0(2)

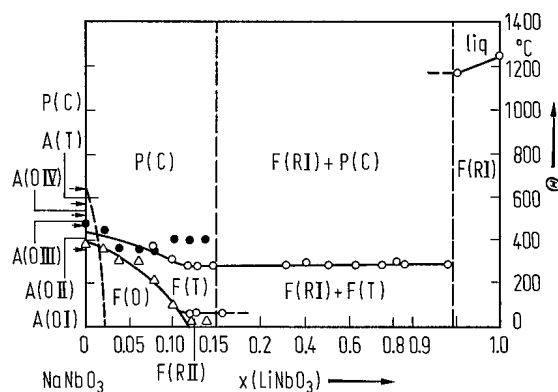


Fig. 1C-a10-001. $(\text{Na}_{1-x}\text{Li}_x)\text{NbO}_3$, Θ vs. x [77Zey]. Polycrystalline specimens: Full circles, open triangles: [68Nit], open circles: [75Gru]. Symmetry: O: orthorhombic, T: tetragonal, R: rhombohedral, C: cubic. Arrows on the left ordinate indicate transition temperatures for single crystal NaNbO_3 [74Meg].

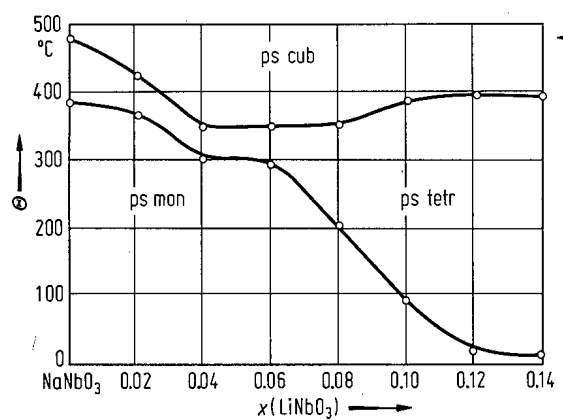


Fig. 1C-a10-002. $(\text{Na}_{1-x}\text{Li}_x)\text{NbO}_3$. Θ vs. x [68Nit].

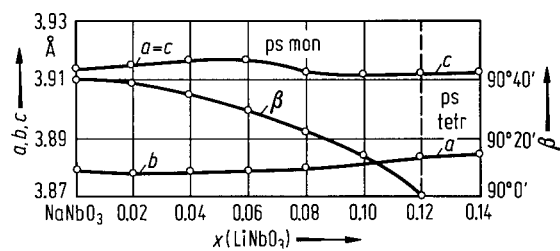


Fig. 1C-a10-003. $(\text{Na}_{1-x}\text{Li}_x)\text{NbO}_3$. Subcell parameters vs. x [68Nit].

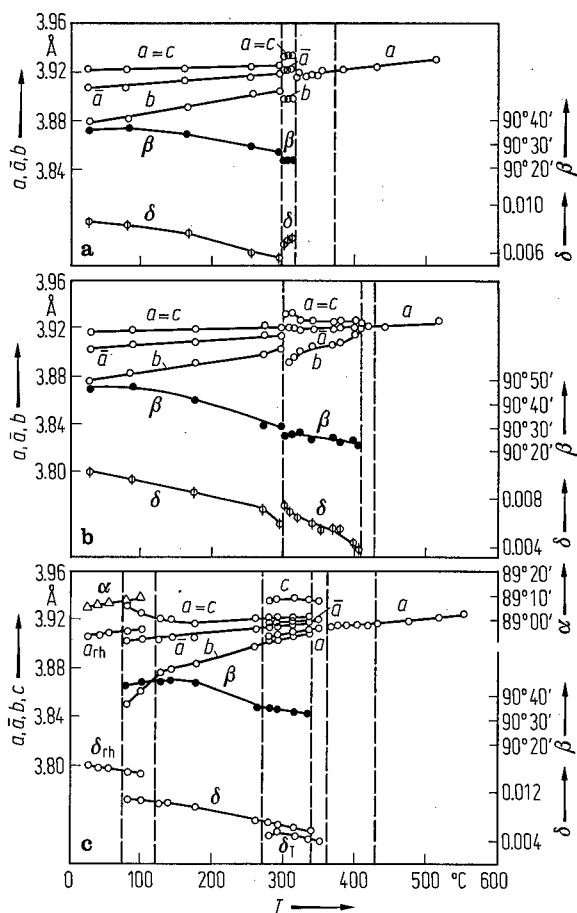


Fig. 1C-a10-004. $(\text{Na}_{1-x}\text{Li}_x)\text{NbO}_3$, Lattice parameters vs. T [77Shi]. (a): $x = 0.03$, (b): $x = 0.08$, (c): $x = 0.125$. $\bar{a} = V^{1/3}$, $\delta_T = c/a - 1$, $\delta_R = 90^\circ - \alpha$, $\delta = 1 - b/a$ (assuming $a \approx c$, $\sin \beta \approx 1$).

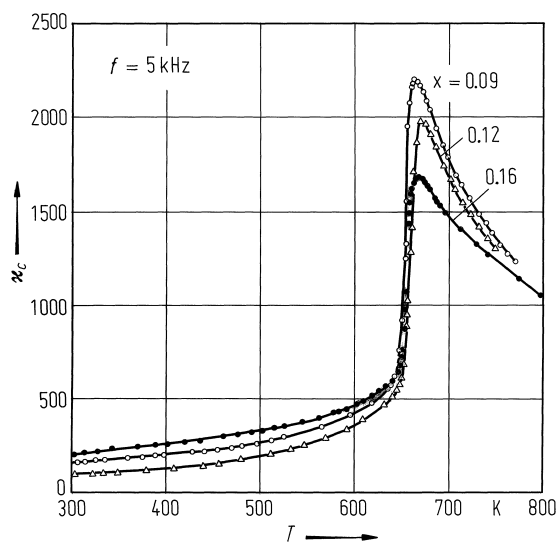


Fig. 1C-a10-005. $(\text{Na}_{1-x}\text{Li}_x)\text{NbO}_3$, κ_c vs. T [85Zha].
Parameter: x .

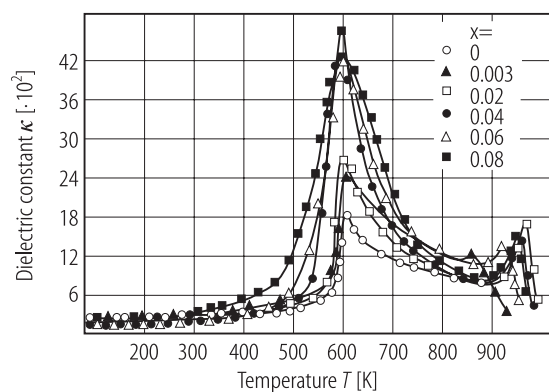


Fig. 1C-a10-006. $(\text{Na}_{1-x}\text{Li}_x)\text{NbO}_3$ (ceramics). κ vs. T [91Kus1]. Parameter: x . $f = 1$ kHz. Cooling process.

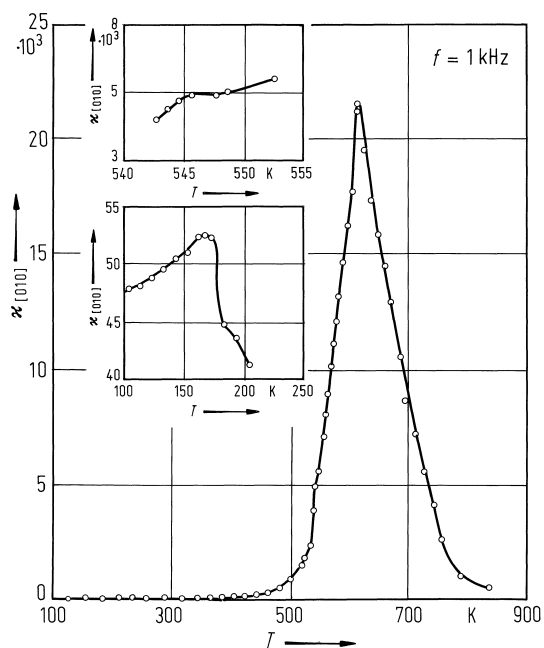


Fig. 1C-a10-007. $(\text{Na}_{0.98}\text{Li}_{0.02})\text{NbO}_3$. $\kappa_{[010]}$ vs. T [83Sad].
 $f = 1 \text{ kHz}$.

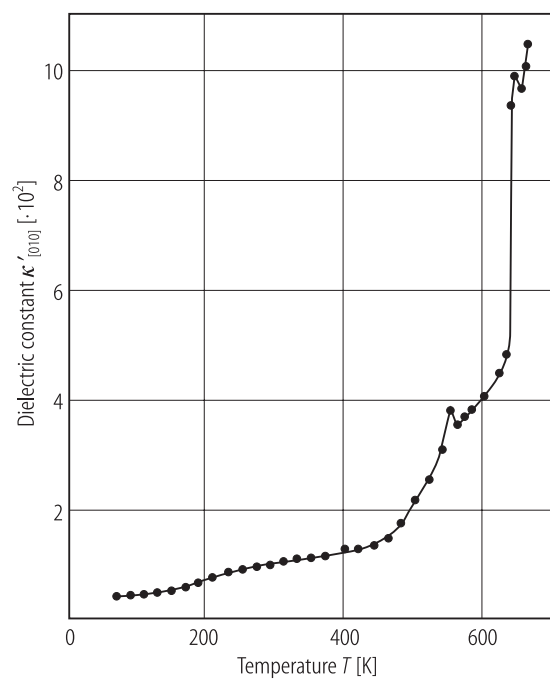


Fig. 1C-a10-008. $(\text{Na}_{0.98}\text{Li}_{0.02})\text{NbO}_3$. $\kappa'_{[010]}$ vs. T [83Sad].
 $f = 1$ kHz.

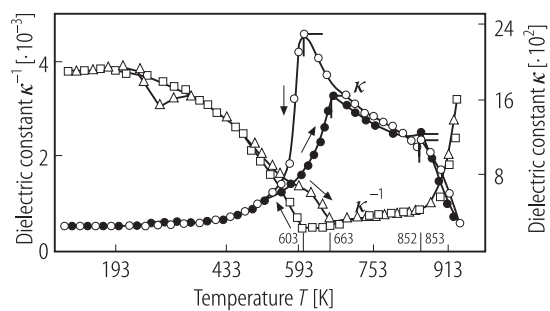


Fig. 1C-a10-009. $(\text{Na}_{0.997}\text{Li}_{0.003})\text{NbO}_3$ (ceramics). κ , κ^{-1} vs. T [91Kus2]. $f = 1$ kHz.

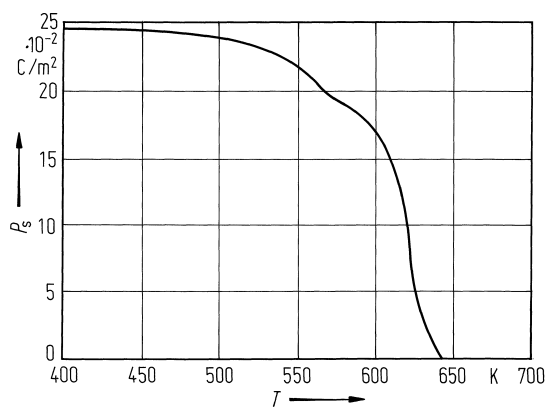


Fig. 1C-a10-010. $(\text{Na}_{0.98}\text{Li}_{0.02})\text{NbO}_3$. T_s vs. T [83Sad].

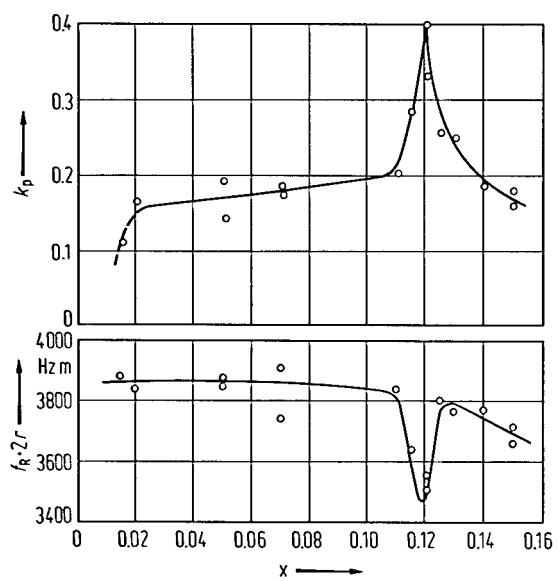


Fig. 1C-a10-011. $(\text{Na}_{1-x}\text{Li}_x)\text{NbO}_3$ (ceramics). k_p , $f_R \cdot 2r$ vs. x [77Hen]. Radial mode.

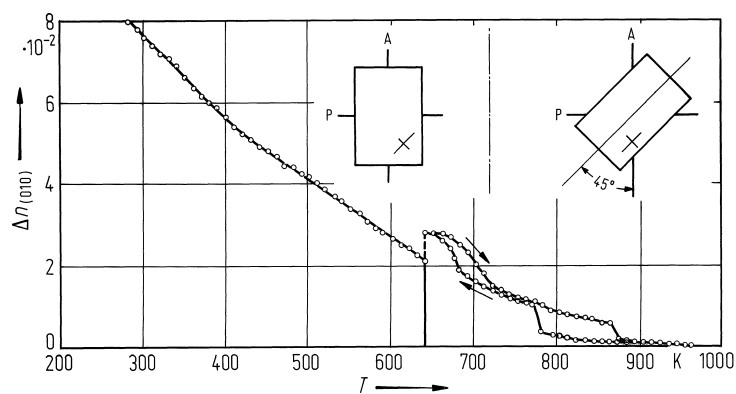


Fig. 1C-a10-012. $(\text{Na}_{0.98}\text{Li}_{0.02})\text{NbO}_3$, $\Delta n_{(010)}$ vs. T [83Sad].

References

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