No. 1C-c9 (Ba,Pb)(Ti,Zr)O_3

1b	Phase diagram: Fig. 1C-c9-001.	
3a	Lattice parameter: see	59Ike
5a	Dielectric constant: Fig. 1C-c9-002, Fig. 1C-c9-003.	
7a	Electromechanical properties: Fig. 1C-c9-004.	
9b	Electrooptic effect: Fig. 1C-c9-005, Fig. 1C-c9-006; Table 1C-c9-001.	

Table 1C-c9-001. $(Pb,Ba)(Zr,Ti)O_3$ (ceramics modified with Nb or Bi). Quadratic electrooptic coefficients [70Tha].

Composition	$n^3(L'_{33}-L'_{13})$	$M'_{33}-M'_{13}$	M_{44}	M_{44} (λ = 0.633 μm)*
	[$\cdot 10^{-16}$ m^2 V^{-2}]*)	[m^4 C^{-2}]*)	[m^4 C^{-2}]*)	[m^4 C^{-2}]
$(Pb_{0.71}Ba_{0.29})_{0.99}[(Zr_{0.71}Ti_{0.29})_{0.98}Nb_{0.02}]O_3$	49	0.016	0.019	0.018(1)
$(Pb_{0.63}Ba_{0.35}Bi_{0.02})(Zr_{0.53}Ti_{0.47})_{0.995}O_3$	12...16	0.021	0.025	0.023(6)
$(Pb_{0.58}Ba_{0.40}Bi_{0.02})(Zr_{0.53}Ti_{0.47})_{0.995}O_3$	5.0	0.024	0.029	0.027(7)
$(Pb_{0.58}Ba_{0.40}Bi_{0.02})(Zr_{0.65}Ti_{0.35})_{0.995}O_3$	1.8	0.013	0.015	0.014(4)
			$M_{11}-M_{12}$	$M_{11}-M_{12}$ (λ = 0.633 μm)
$(Pb_{0.89}La_{0.11})(Zr_{0.65}Ti_{0.35})_{0.973}O_3$	11	0.009	0.012	0.011(2)

*) Calculated values using data taken at RT. Primed quantities refer to the ceramics, unprimed to single crystals of the material. λ = 0.546 μm except for the last column.

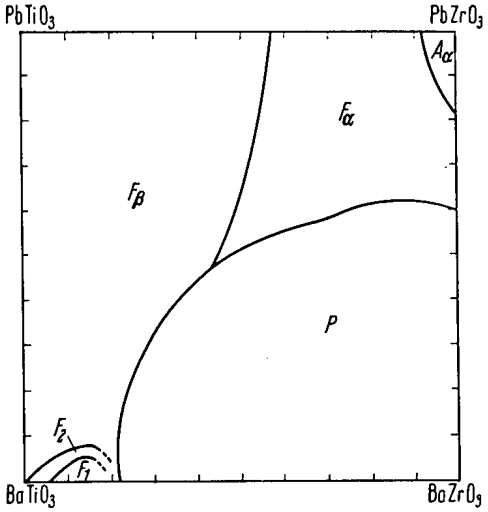

Fig. 1C-c9-001. (Ba,Pb)(Ti,Zr)O_3. Phase diagram [59Ike]. F_1 and F_2 correspond to ferroelectric rhombohedral and orthorhombic phases of $BaTiO_3$, respectively.

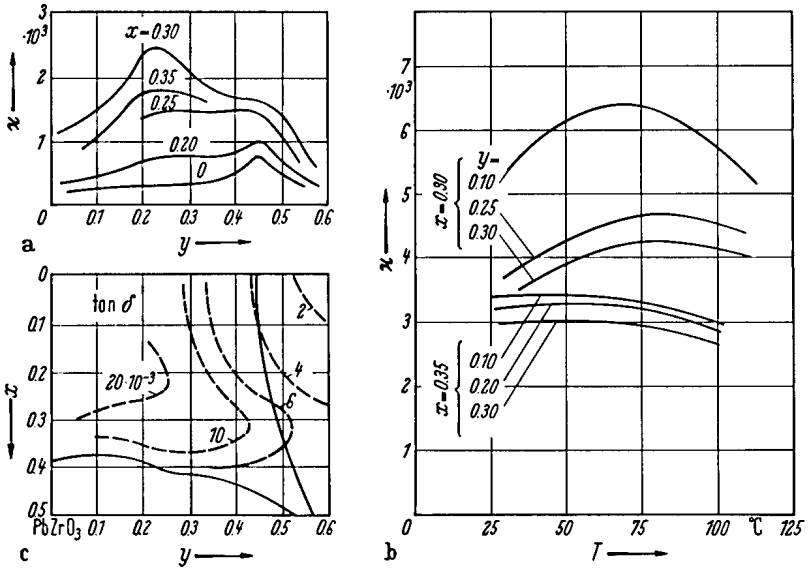

Fig. 1C-c9-002. $(Pb_{1-x}Ba_x)(Zr_{1-y}Ti_y)O_3$ (ceramics). Fig. **(a)** $\varkappa$ vs. y. Parameter: x; Fig. **(b)** $\varkappa$ vs. *T*. Parameter: x, y; Fig. **(c)** $\tan\delta$ vs. x, y [59Ike]. The solid lines in Fig. (c) indicate the phase boundaries.

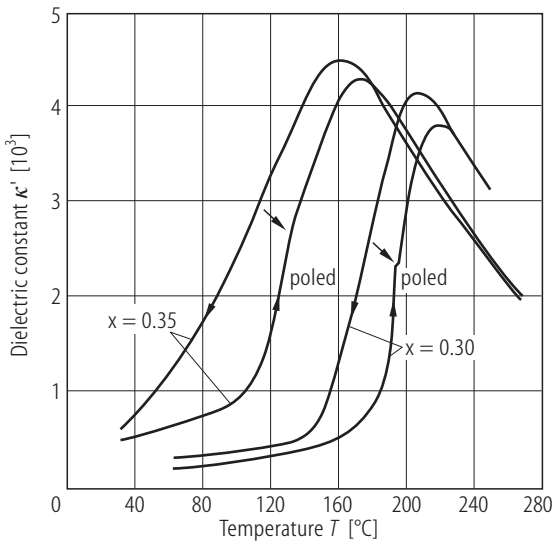

Fig. 1C-c9-003. $(Pb_{1-x}Ba_x)(Zr_{0.6}Ti_{0.4})O_3$ (ceramics). κ' vs. T [80Jon]. Parameter: x.

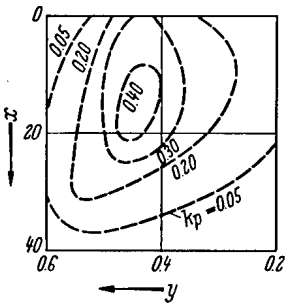

Fig. 1C-c9-004. $(Pb_{1-x}Ba_x)(Zr_{1-y}Ti_y)O_3$ (ceramics). k_p vs. x, y [59Ike].

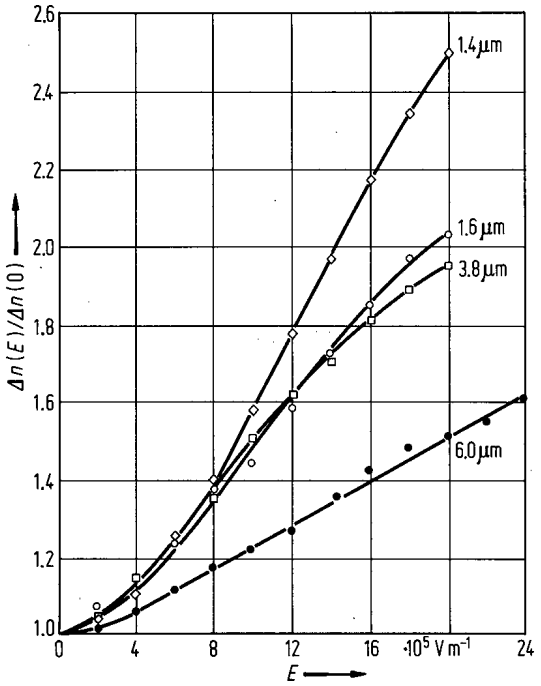

Fig. 1C-c9-005. $(Ba_{0.20}Pb_{0.80})_{0.99}[(Ti_{0.20}Zr_{0.80})_{0.98}Bi_{0.02}]O_3$ (ceramics). $\Delta n(E)/\Delta n(0)$ vs. E [70Lan]. Δn: effective birefringence. E: bias field. Figures indicate the grain sizes of samples. $\lambda = 656$ nm.

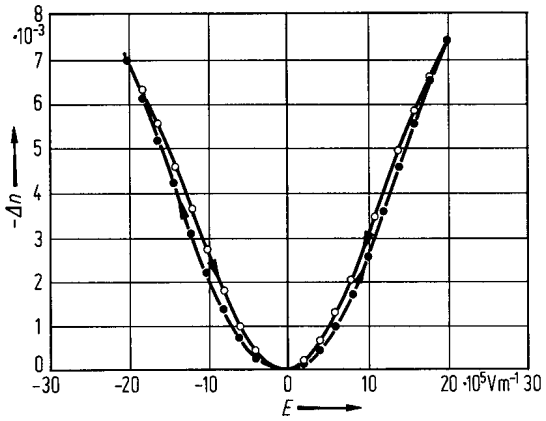

Fig. 1C-c9-006. $(Ba_{0.29}Pb_{0.71})_{0.99}[(Ti_{0.29}Zr_{0.71})_{0.98}Nb_{0.02}]O_3$ (ceramics). $-\Delta n$ vs. E [70Tha]. Δn: birefringence for $\lambda = 546$ nm.

References

59Ike Ikeda, T.: J. Phys. Soc. Jpn **14** (1959) 168.
70Lan Land, C.E., Haertling, G.H.: J. Phys. Soc. Jpn. **28**, Suppl. (1970) 96.
70Tha Thacher, P.D.: J. Appl. Phys. **41** (1970) 4790.
80Jon Jonker, G.H., Juarez, R., Burggraaf, A.J., Stenger, C.G.F.: Ferroelectrics **24** (1980) 293.