No. 1C-b46 $PbTiO_3$–$Pb(Zn_{1/3}Nb_{2/3})O_3$

1b	Ferroelectric transition temperature: Fig. 1C-b46-001; see also	69Nom
2a	Single crystal growth from molten PbO flux: see	69Nom, 86Cha
	Preparation of ceramics by HIP (hot isostatic pressing) method: see	92Tak
3a	Lattice parameters: Fig. 1C-b46-002, Fig. 1C-b46-003.	
5a	Dielectric constant: Figs. 1C-b46-004...1C-b46-007.	
b	Effect of E_{bias} on dielectric property: Fig. 1C-b46-008.	
c	Spontaneous polarization: Fig. 1C-b46-009.	
d	Pyroelectricity: Fig. 1C-b46-010.	
7a	Electromechanical property: Table 1C-b46-001; Fig. 1C-b46-011, Fig. 1C-b46-012.	
8a	Elastic compliance: Fig. 1C-b46-013.	
9a	Refractive index: Fig. 1C-b46-014.	
b	Electrooptic quadratic effect: Fig. 1C-b46-015, Fig. 1C-b46-016.	
16	Optical observation of domains: see	90Kat

Table 1C-b46-001. 0.91 $Pb(Zn_{1/3}Nb_{2/3})O_3$·0.09 $PbTiO_3$ (crystal). Electromechanical properties [82Kuw].

Poling and field direction	[111]				[001]			
Length direction	$[1\bar{1}0]$		[111]		$[1\bar{1}0]$		[001]	
Phase	R	T	R	T	R	T	R	T
s^E [$\cdot 10^{-11}$ m^2N^{-1}]	1.80	1.55	1.36	1.03	3.69	1.77	14.30	5.60
s^D [$\cdot 10^{-11}$ m^2N^{-1}]	1.71	1.39	0.76	0.73	2.26	1.36	2.18	1.76
d [$\cdot 10^{-12}$ CN^{-1}]	–194	–352	480	450	–493	–266	1570	795
k	0.23	0.32	0.68	0.53	0.62	0.48	0.92	0.83
κ^T			4100	8200			2200	1880
κ^S			2200	–			295	570
Notation in original paper	[111] ⊥		[111] ∥		[001] ⊥		[001] ∥	

R: At 25°C in rhombohedral phase (P_s = 0.52 Cm^{-2}).
T: At 130°C in tetragonal phase (P_s = 0.30 Cm^{-2}). Directions are referred to pseudocubic axes.

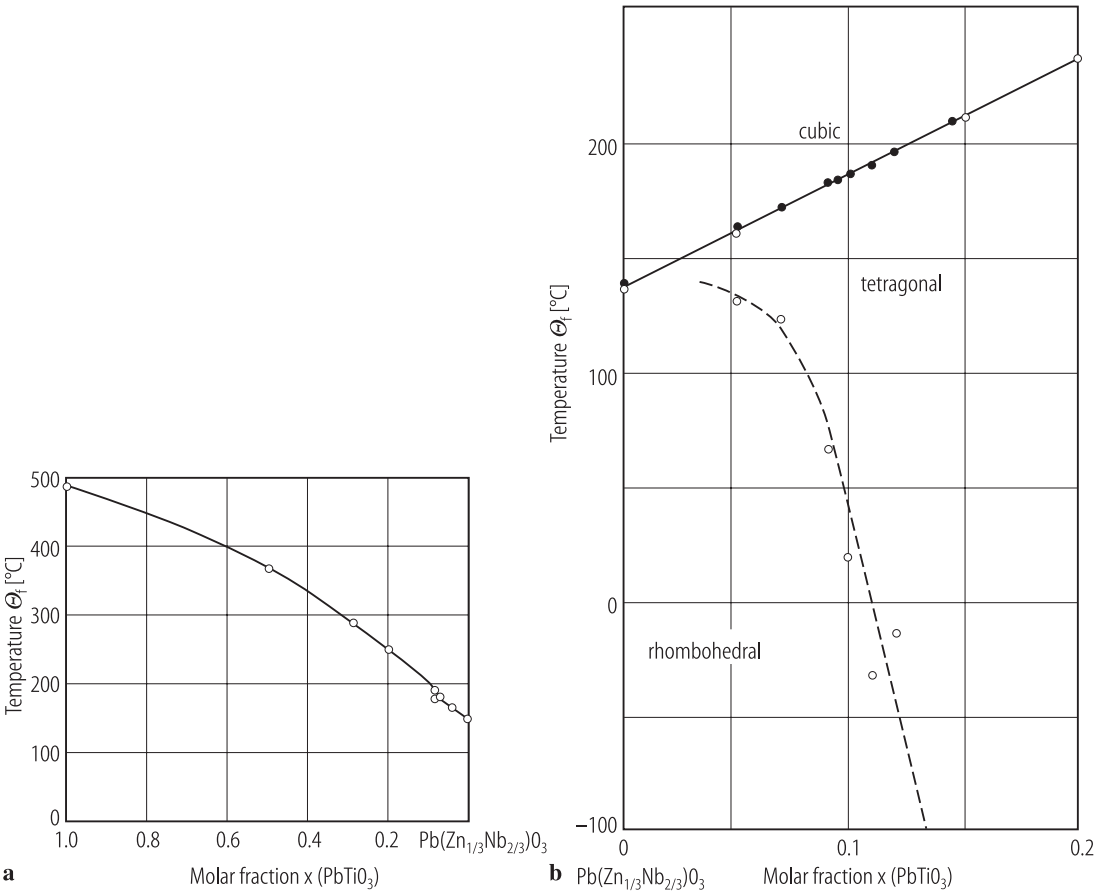

Fig. 1C-b46-001. $(1-x)Pb(Zn_{1/3}Nb_{2/3})O_3 \cdot x\,PbTiO_3$. Θ_f vs. x. **(a)** $0 \le x \le 1.0$ [69Nom], **(b)** $0 \le x \le 0.2$ [81Kuw].

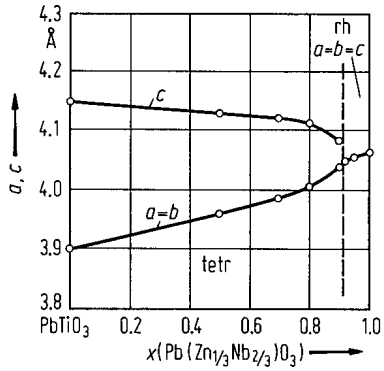

Fig. 1C-b46-002. (1–x)$PbTiO_3$·x $Pb(Zn_{1/3}Nb_{2/3})O_3$. *a*, *c* vs. x [69Nom].

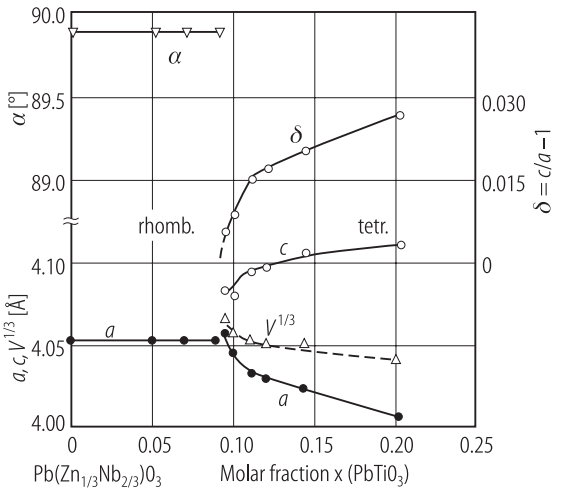

Fig. 1C-b46-003. (1–x)Pb($Zn_{1/3}Nb_{2/3}$)O_3·x $PbTiO_3$. *a*, *c*, α, δ, $V^{1/3}$ vs. x [81Kuw]. $\delta = c/a - 1$.

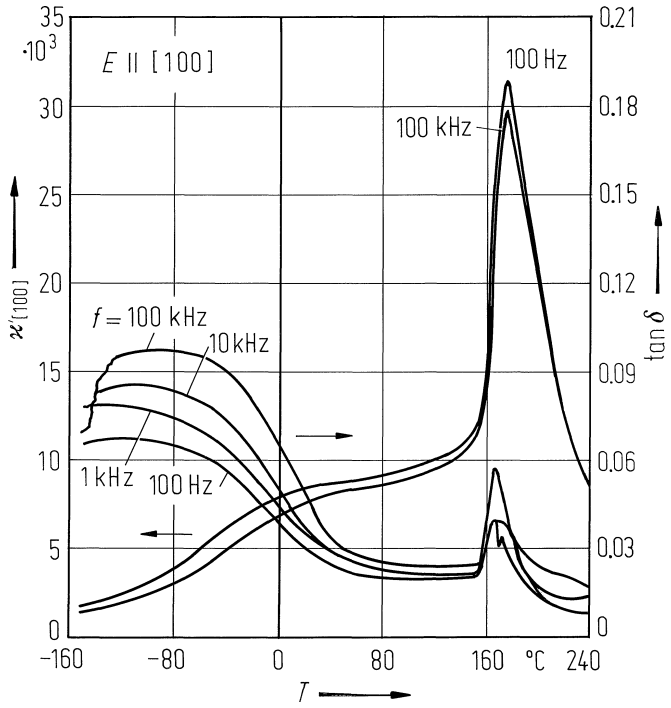

Fig. 1C-b46-004. $Pb[(Zn_{1/3}Nb_{2/3})_{0.9}Ti_{0.1}]O_3$. κ', $\tan\delta$ vs. T [86Cha]. Parameter: f. κ': κ along the pseudocubic [100] direction of unpoled specimen.

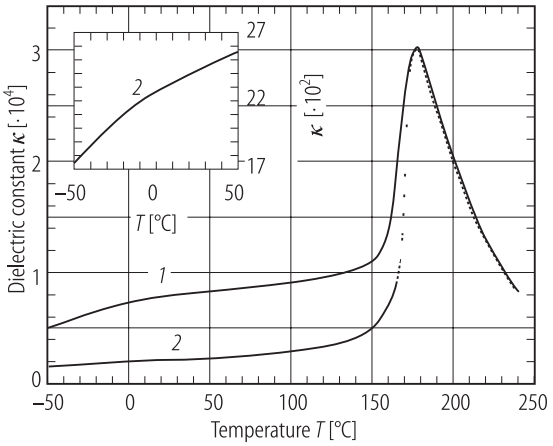

Fig. 1C-b46-005. $Pb[(Zn_{1/3}Nb_{2/3})_{0.9}Ti_{0.1}]O_3$. κ vs. T [86Cha]. Curve *1*: unpoled, *2*: poled. Poling direction: [100]. f = 1 kHz.

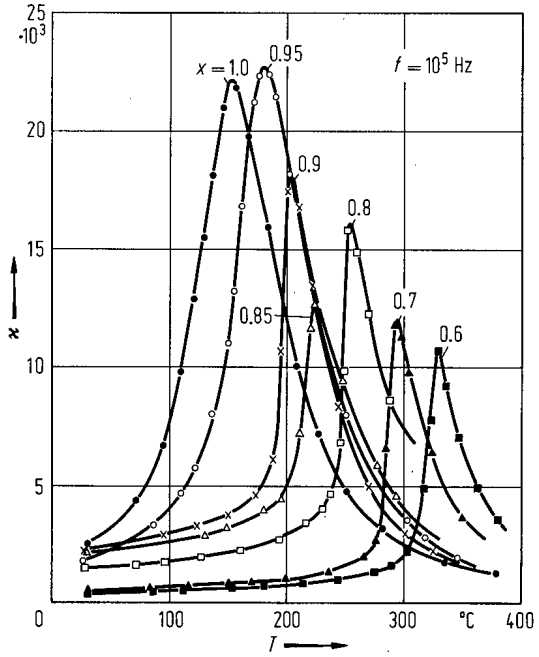

Fig. 1C-b46-006. (1–x)$PbTiO_3$·x $Pb(Zn_{1/3}Nb_{2/3})O_3$. κ vs. T [73Nom]. Parameter: x. $f = 10^5$ Hz.

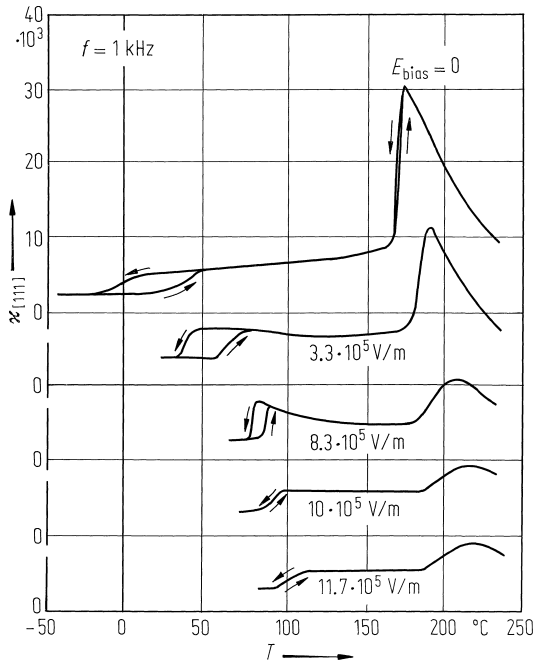

Fig. 1C-b46-007. $Pb[(Zn_{1/3}Nb_{2/3})_{0.91}Ti_{0.09}]O_3$. $\kappa_{[111]}$ vs. T [82Kuw]. Parameter: E_{bias}.

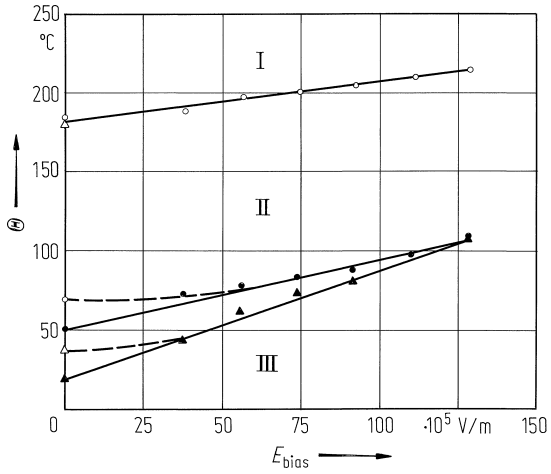

Fig. 1C-b46-008. $Pb[(Zn_{1/3}Nb_{2/3})_{0.91}Ti_{0.09}]O_3$. Θ vs. E_{bias} [82Kuw]. E_{bias} is applied along [111] direction. Open and solid symbols at E_{bias} = 0 refer to poled and unpoled states, respectively. Solid circles: heating, solid triangles: cooling.

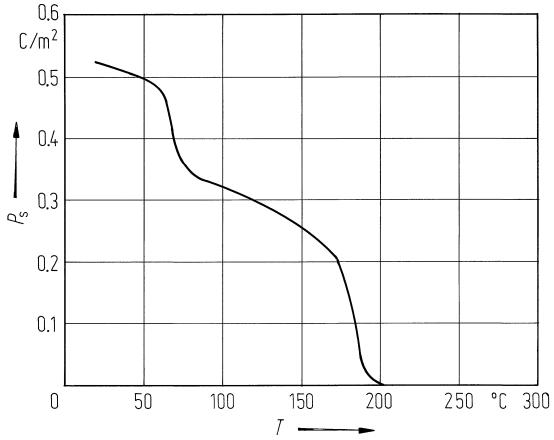

Fig. 1C-b46-009. $Pb[(Zn_{1/3}Nb_{2/3})_{0.91}Ti_{0.09}]O_3$. P_s vs. T [82Kuw]. P_s: spontaneous polarization along pseudocubic [111] direction.

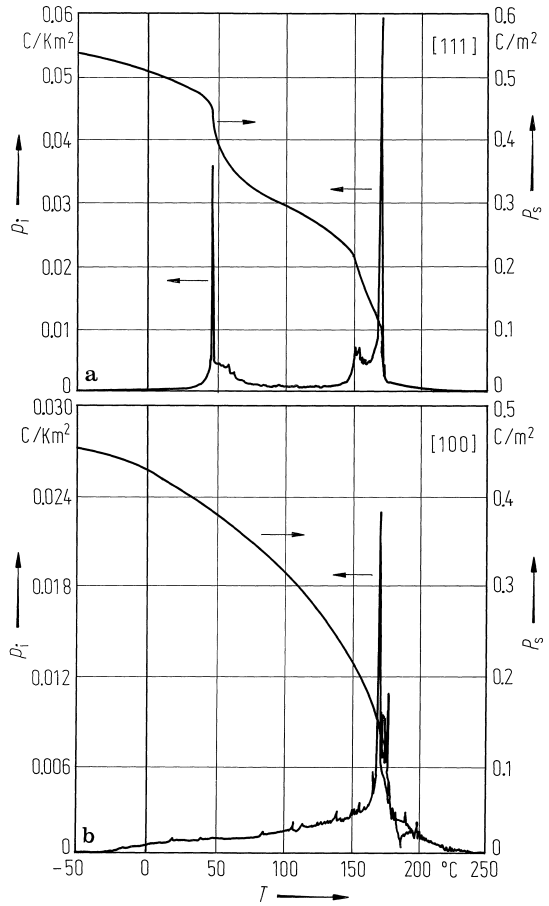

Fig. 1C-b46-010. $Pb[(Zn_{1/3}Nb_{2/3})_{0.9}Ti_{0.1}]O_3$. P_s, p_i vs. T [86Cha]. **(a)**: pseudocubic [111] axis, **(b)**: pseudocubic [100] axis.

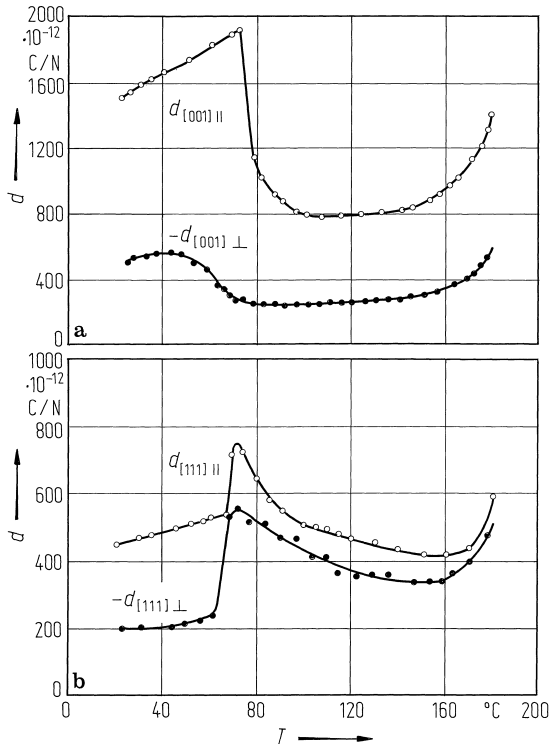

Fig. 1C-b46-011. $Pb[(Zn_{1/3}Nb_{2/3})_{0.91}Ti_{0.09}]O_3$. d vs. T [82Kuw]. d: piezoelectric constant (for notations of d see Table 1C-b46-001).

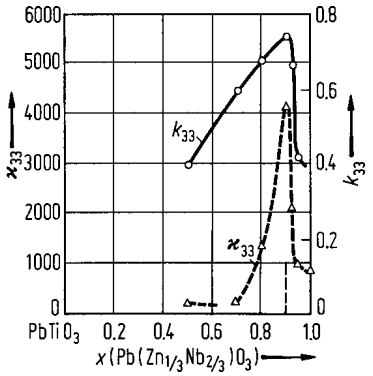

Fig. 1C-b46-012. (1–x)$PbTiO_3$·x $Pb(Zn_{1/3}Nb_{2/3})O_3$. κ_{33}, k_{33} vs. x [69Yon]. κ at f = 1 kHz. k_{33}: electromechanical coupling coefficient.

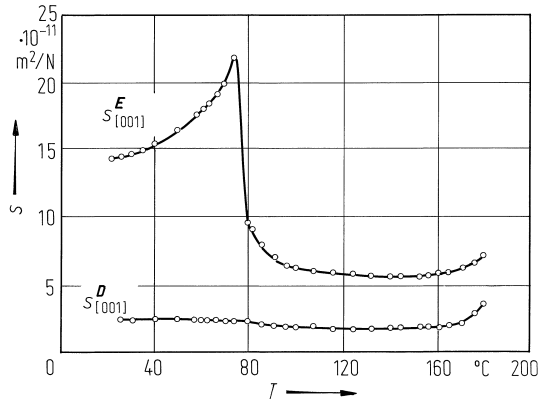

Fig. 1C-b46-013. $Pb[(Zn_{1/3}Nb_{2/3})_{0.91}Ti_{0.09}]O_3$. *s* vs. *T* [82Kuw]. *s*: elastic compliance (see Table 1C-b46-001).

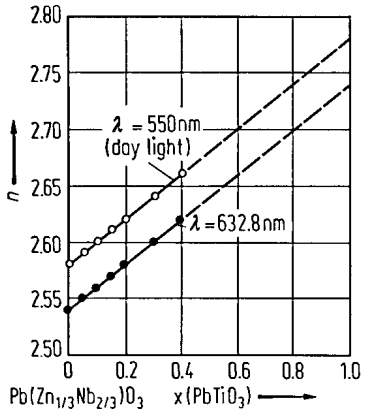

Fig. 1C-b46-014. (1–x)Pb($Zn_{1/3}Nb_{2/3}$)O_3·x $PbTiO_3$. *n* vs. x [73Nom]. Parameter: λ.

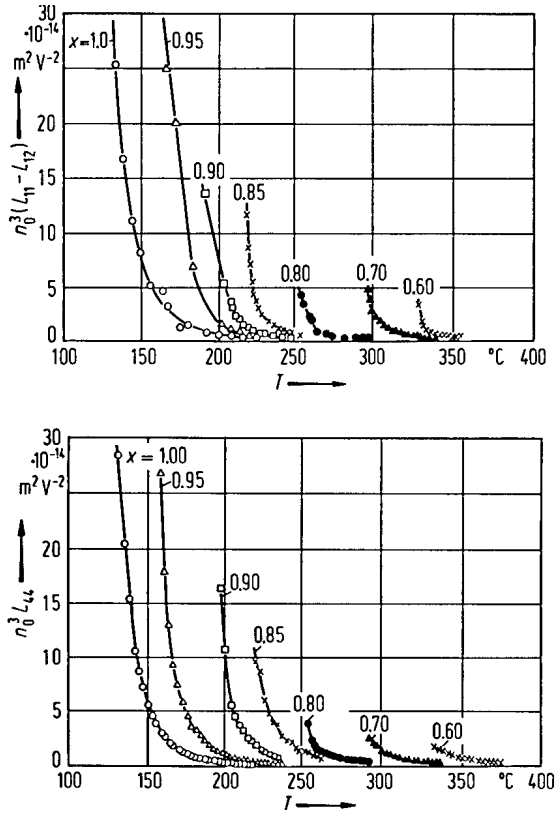

Fig. 1C-b46-015. (1−x)$PbTiO_3$·x $Pb(Zn_{1/3}Nb_{2/3})O_3$. $n_o^3 L_{44}$, $n_o^3 (L_{11} - L_{12})$ vs. T [73Nom]. Parameter: x. λ = 632.8 nm.

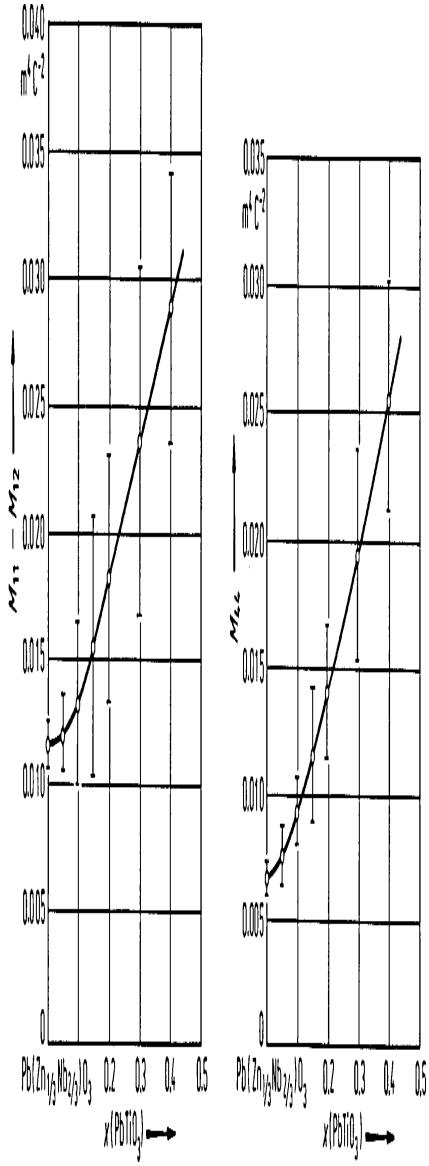

Fig. 1C-b46-016. (1−x)Pb($Zn_{1/3}Nb_{2/3}$)O_3·x $PbTiO_3$.
$M_{11} - M_{12}$, M_{44} vs. x [73Nom]. λ = 632.8 nm.

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