

No. 1B-e6 Pb(Fe_{2/3}W_{1/3})O₃
(*M* = 353.7)

1a	Ferroelectricity in $\text{Pb}(\text{Fe}_{2/3}\text{W}_{1/3})\text{O}_3$ was discovered by Smolenskii et al. in 1959.				59Smo
b	phase	III	II	I	
	state	F, A_{magn}	P, A_{magn}	P, P_{magn}	
	crystal system		cubic	cubic	62Bok
	Θ [K]	178 (average) 363 (average)			
	Two transitions are diffuse phase transitions smeared around 178 K and 363 K.				
2a	Crystal growth: flux method with PbO.				62Bok
3a	$a = 4.02 \text{ \AA}$ at RT.				65Rog
5a	Dielectric constant: Fig. 1B-e6-001, Fig. 1B-e6-002. $1/\kappa - 1/\kappa_{\text{max}} = (T - \Theta_{\text{max}})\gamma/C'$, where $\gamma = 1.78$ and $C' = 1.0 \cdot 10^7 \text{ K}$ at $p = 0 \text{ G Pa}$ and 1 kHz . Effect of p on κ : Fig. 1B-e6-003. Phase diagram in regard to p : Fig. 1B-e6-004.				
c	Spontaneous polarization: Fig. 1B-e6-005.				
12	Magnetic susceptibility: see Fig. 1B-e6-001. Magnetization is a linear function of H up to $636.6 \cdot 10^3 \text{ Am}^{-1}$. Effective magnetic moment: $4.2 \mu_{\text{B}}$.				62Bok
13b	ESR: Temperature dependence of the line width for Fe^{3+} . Mössbauer effect: $\delta = 0.4 \text{ mms}^{-1}$ (relative to stainless steel), $\Delta E_{\text{quad}} = 0.5 \text{ mms}^{-1}$ at 400 K , $H_{\text{int}} = -37.0 \cdot 10^6 \text{ Am}^{-1}$ at 100 K .				66Kas 73New

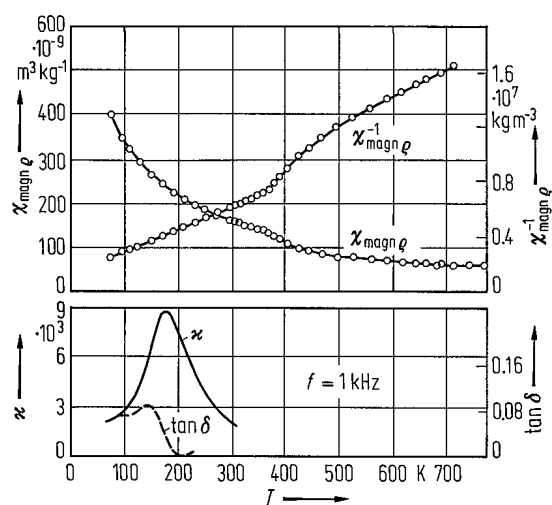


Fig. 1B-e6-001. $\text{Pb}(\text{Fe}_{2/3}\text{W}_{1/3})\text{O}_3$. κ , $\tan \delta$, $\chi_{\text{magn}} \rho$, $\chi_{\text{magn}}^{-1} \rho$ vs. T [62Bok]. $f = 1 \text{ kHz}$ for κ , $\tan \delta$. $\chi_{\text{magn}} \rho$: mass magnetic susceptibility.

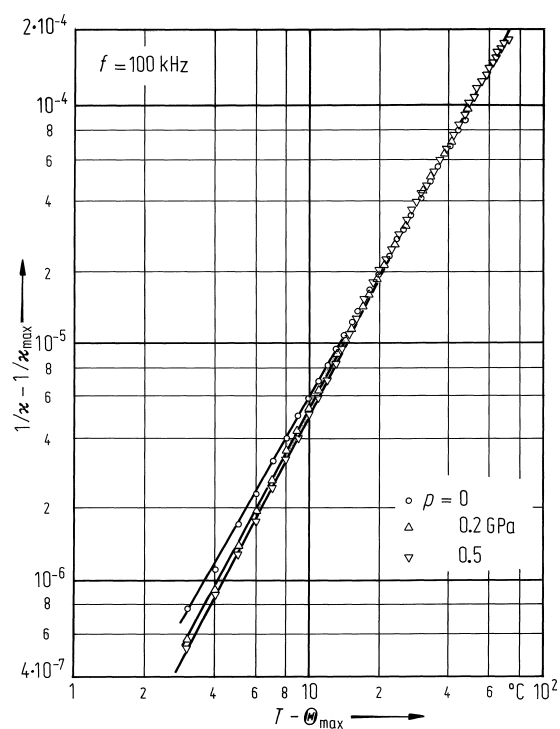


Fig. 1B-e6-002. $\text{Pb}(\text{Fe}_{2/3}\text{W}_{1/3})\text{O}_3$. $\kappa^{-1} - \kappa_{\text{max}}^{-1}$ vs. $T - \Theta_{\text{max}}$ [85Yas]. Parameter: p . κ_{max} : maximum dielectric constant. Θ_{max} : temperature of κ_{max} . $f = 100$ kHz.

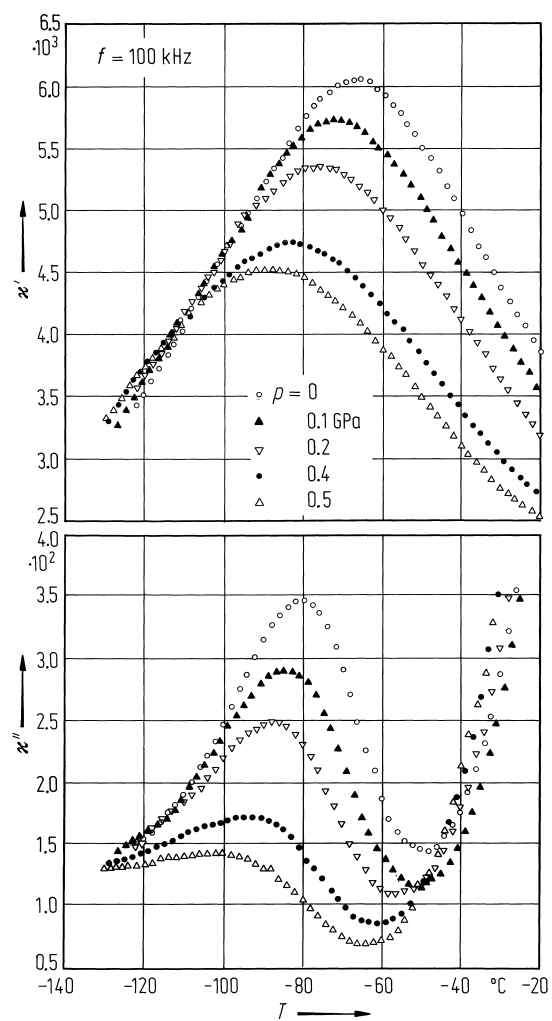


Fig. 1B-e6-003. $\text{Pb}(\text{Fe}_{2/3}\text{W}_{1/3})\text{O}_3$. κ' , κ'' vs. T [85Yas].
Parameter: p .

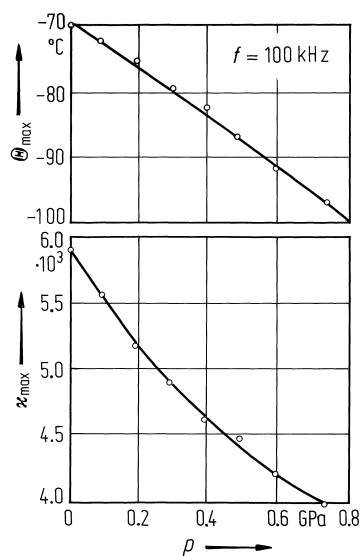


Fig. 1B-e6-004. $\text{Pb}(\text{Fe}_{2/3}\text{W}_{1/3})\text{O}_3$. κ_{\max} , Θ_{\max} vs. p [85Yas].
 κ_{\max} : maximum dielectric constant. Θ_{\max} : temperature of κ_{\max} . $f = 100 \text{ kHz}$.

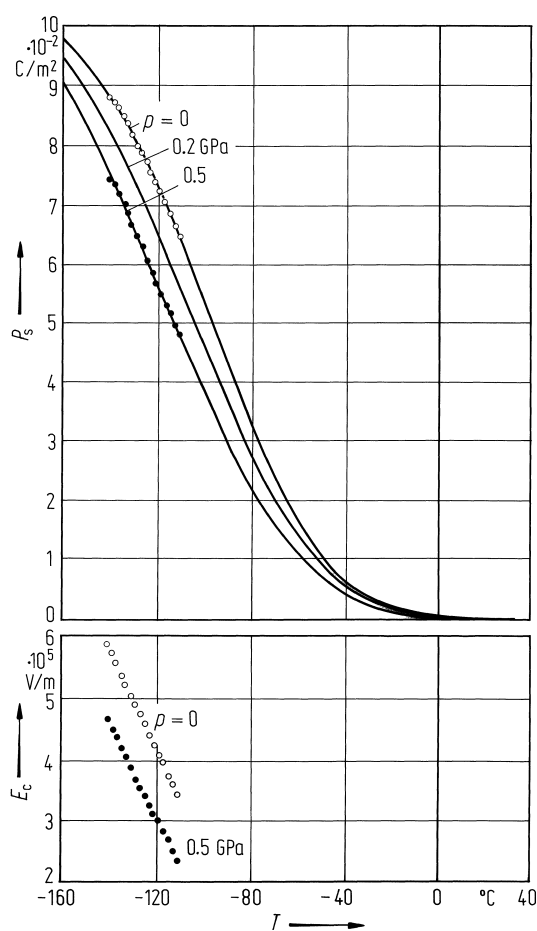


Fig. 1B-e6-005. $\text{Pb}(\text{Fe}_{2/3}\text{W}_{1/3})\text{O}_3$ (ceramics). P_s , E_c vs. T [85Yas]. Parameter: p . Full curves are calculated values.

References

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