

No. 1A-14 BaZrO₃, Barium zirconate*(M* = 276.55)

1a	A few properties of BaZrO ₃ were studied in comparison with those of some perovskite-type ferroelectrics.	57Rot
2a	Crystal growth: exchange reaction: see	93Pot
3a	$a = 4.192 \text{ \AA}$ at RT.	57Rot
4	Linear thermal expansion: $\alpha = 5.64 \cdot 10^{-6} \text{ }^{\circ}\text{C}^{-1}$ between 23 °C and 214 °C; $\alpha = 6.54 \cdot 10^{-6} \text{ }^{\circ}\text{C}^{-1}$ between 214 °C and 324 °C for ceramics.	65Bra
5a	Dielectric constant: $\kappa = 32.0$ at RT ($f = 1 \text{ MHz}$).	61Ste
9a	Infrared absorption: Fig. 1A-14-001, Fig. 1A-14-002; Table 1A-14-001.	

Table 1A-14-001. BaZrO₃. Frequencies in 10¹² Hz and symmetry of infrared modes of lattice vibration obtained from Kramers-Kronig analysis of the reflectance data at RT [65Per].

ν_1 (Zr–O stretch)	ν_2 (Zr–O ₃ torsion)	ν_3 (O–Zr–O bend)	ν_4 (cation–ZrO ₃ lattice mode)
15.2 (F _{1u})	–(F _{2u})	6.30 (F _{1u})	3.45 (F _{1u})

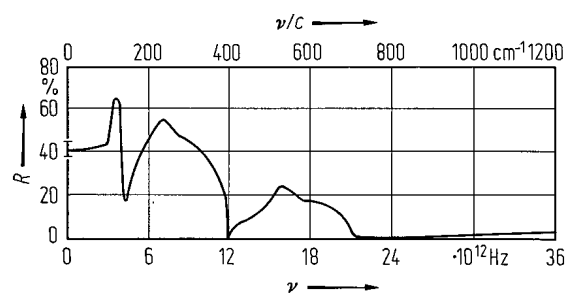


Fig. 1A-14-001. BaZrO₃. R vs. ν [65Per]. R : reflectance.

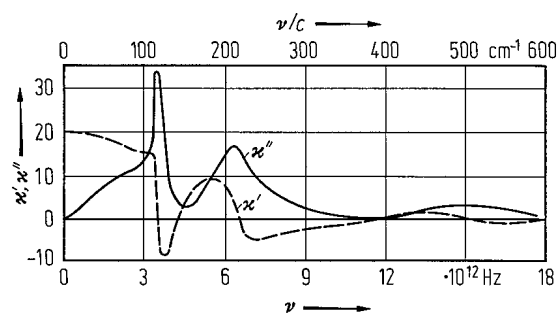


Fig. 1A-14-002. BaZrO₃. κ' and κ'' vs. ν [65Per]. The curves were obtained from reflectivity data using Kramers-Kronig relation.

References

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