No. 26A-3 $BaFeF_4$

(M = 269.17)

1a It was suggested by Eibschütz et al. in 1969 that $BaFeF_4$ is ferroelectric because the dielectric behavior shows close resemblance to the ferroelectric $BaMF_4$ (M = Mg, Zn, Co, Ni). 69Eib

b

phase	II	I	68Sch
state	AF^{magn} [a])	(F)	[a]) 68Eib
crystal system		orthorhombic	
space group		$A2_1am$ – C_{2v}^{12}	
Θ [K]	60(2) [a])		

P_s || [100].

T_{melt} = 720(5) °C. 69DiD

$\rho = 4.74 \cdot 10^{-3}$ kg m^{-3}, $\rho_X = 4.726 \cdot 10^{-3}$ kg m^{-3}. 68Eib

2a Crystals can be synthesized from the melt of high purity binary components BaF_2 and FeF_2 in an HF atmosphere. Single crystals can be prepared by a horizontal pass method. 68Eib

3a Unit cell parameters: a = 5.829 Å, b = 14.837 Å, c = 4.238 Å. 68Sch

b Z = 4. 68Sch

5a Dielectric constant along a axis at 100 MHz: see Fig. 26A-1-001 in No. 26A-1.

κ_a = 11, κ_b = 17, κ_c = 8 at 100 MHz at RT, and $\kappa_a \approx$ 200 near the melting point (≈720 °C). 69DiD

11 Conductivity along the a axis: $\sigma_a \approx 3 \cdot 10^{-5}\ \Omega^{-1}$ m^{-1}. 69Eib

12 Magnetic properties and Mössbauer effect: antiferromagnetic at low temperatures, Néel point $\Theta_N = \Theta_{I-I}$ = 60(2) K; susceptibility of the polycrystalline sample $\chi_{magn\,\rho} \approx 81.6 \cdot 10^{-6}$ m^3 kg^{-1}. 68Eib

Magnetic structure and magnetoelectric effect: see 75Dvo