

## 26 BaMnF<sub>4</sub> family

### 26A Pure compounds

#### No. 26A-1 BaMgF<sub>4</sub>

(*M* = 237.63)

1a	Ferroelectric activity was found by Eibschütz et al. in 1969.	69Eib								
b	<table><tr><td>phase</td><td>I</td></tr><tr><td>state</td><td>F</td></tr><tr><td>crystal system</td><td>orthorhombic</td></tr><tr><td>space group</td><td>A2<sub>1</sub>am–C<sub>2v</sub><sup>12</sup></td></tr></table>	phase	I	state	F	crystal system	orthorhombic	space group	A2 <sub>1</sub> am–C <sub>2v</sub> <sup>12</sup>	69Kev
phase	I									
state	F									
crystal system	orthorhombic									
space group	A2 <sub>1</sub> am–C <sub>2v</sub> <sup>12</sup>									
	$P_s \parallel [100]$ . $T_{\text{melt}} = 865(5)^\circ\text{C}$ . Transparent, colorless.	69DiD 74Rec								
2a	High quality crystal can be grown by Chochralski technique using iridium crucible. Epitaxial growth of thin film: see	74Rec 93Aiz, 94Aiz, 91Sin								
3a	Unit cell parameters: $a = 5.810(2) \text{ \AA}$ , $b = 14.509(6) \text{ \AA}$ , $c = 4.125(2) \text{ \AA}$ .	69Kev								
b	$Z = 4$ .	69Kev								
4	Thermal expansion coefficient at RT: $\alpha_a = 11.5 \cdot 10^{-6}^\circ\text{C}^{-1}$ , $\alpha_b = 21 \cdot 10^{-6}^\circ\text{C}^{-1}$ , $\alpha_c = 20 \cdot 10^{-6}^\circ\text{C}^{-1}$ .	74Rec								
5a	Dielectric constant along the ferroelectric $a$ axis at 100 MHz: Fig. 26A-1-001. $\kappa_a = 8$ , $\kappa_b = 14$ , $\kappa_c = 8$ at 100 MHz at RT, $\kappa_a \approx 21$ near the melting point ( $\approx 865^\circ\text{C}$ ). See also	69DiD 74Rec								
c	$P_s = 7.7(3) \cdot 10^{-2} \text{ Cm}^{-2}$ at RT.	69Eib								
7a	Piezoelectric constant: Table 26A-1-001.									
8a	Elastic stiffness and thermoelastic constant: Table 26A-1-002.									
9a	Refractive indices: Table 26A-1-003. See also Luminescence of Ce <sup>3+</sup> and Eu <sup>2+</sup> : see	74Rec 87Ban1, 87Ban2, 90Mel								
e	Nonlinear optical susceptibilities: Table 26A-1-004.									
13b	ESR and ENDOR: see Spin Hamiltonian parameters for Mn <sup>2+</sup> : Table 26A-1-005.	80Fuk								