No. 39A-14 Rb_2CoBr_4, Rubidium tetrabromocobaltate

(M = 549.48)

1a Ferroelectricity in Rb_2CoBr_4 was discovered by Sawada et al. in 1978. 78Saw

b

phase	V	IV	III	II *)	I
state	(F) [a])	(F,AF) [a]) [b])	F		P
crystal system					orthorhombic
space group					Pmcn– D_{2h}^{16} [c])
Θ [K]	65 [d])	95 [d])	192, 177 [e]) **)	333 [f])	

78Saw

[a]) 91Yam
[b]) 87Yam
[c]) 87Kas
[d]) 85Ges
[e]) 90Shi
[f]) 79Saw

*) Incommensurate structural modulation was found in phase II; see subsection 14a.
**) 192 K on heating, 177 K on cooling.

P_s || [100] in phase III and IV. 85Ges, 90Ges1

Antiferroelectric axis in phase IV || [010]. 87Yam

P_s lies in (010) in phase V. 91Yam

T_{melt} = 500 °C. 75Sei

$\rho = 3.65 \cdot 10^3$ kg m^{-3}, $\rho_X = 3.67 \cdot 10^3$ kg m^{-3}. 75Sei

Slightly greenish blue. 85Ges

Cleavage plane: (010). 85Ges

Deliquescent. 85Ges

Phase diagram in regard to p: Fig. 39A-14-001.

$[d\Theta_{II-I}/dp]_{p=0}$ = 39 K GPa^{-1}, $[d\Theta_{III-II}/dp]_{p=0}$ = –52 K GPa^{-1}. 90Ges2

2a Crystal growth: Bridgman method from a stoichiometric melt. 85Ges

3a Unit cell parameters: a = 7.643(2) Å, b = 13.337(4) Å, c = 9.724(3) Å at 348 K. 87Kas

b Z = 4 in phase I. 75Sei, 87Kas

5a Dielectric constants: Fig. 39A-14-002; see also 85Ges
Effect of p: Fig. 39A-14-003, Fig. 39A-14-004, Fig. 39A-14-005;
see also Fig. 39A-2-015 in No. 39A-2.

c Spontaneous polarization and polarization induced by electric field: Fig. 39A-14-006, Fig. 39A-14-007, Fig. 39A-14-008;
see also 90Ges1, 90Shi

14a Wave vector of structural modulation: Fig. 32A-14-009.