Polytype		Space group	Lattice parameters			
R	Z		a[Å]	b[Å]	c[Å]	γ[°]
20	11	Pcab	12.08	13.94	4.53	-
3M	21	$P2_1/b$	20.92	13.94	4.53	120.00
40	22	Pcab	24.15	13.94	4.53	-
4M	31	$P2_1/b$	25.14	13.94	4.53	106.10
$5M_1$	32	$P2_1/b$	31.95	13.94	4.53	109.12
$5M_2$	2111	$P2_1/b$	31.95	13.94	4.53	109.12
$5M_3$	41	$P2_1/b$	30.38	13.94	4.53	96.56
60	33	Pcab	36.22	13.94	4.53	-
$6M_1$	51	$P2_1/b$	38.82	13.94	4.53	111.05
$6M_2$	42	$P2_1/b$	36.88	13.94	4.53	100.87
80	44	Pcab	43.30	13.94	4.53	-

R-Ramsdell notation
Z-Zdhanow notation

O-orthorombic
M-monoclinic

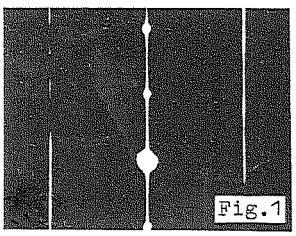


Fig.1

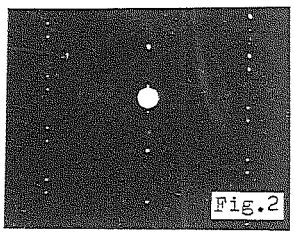


Fig.2

20.3-2 STUDY OF POLYTYPISM IN GaS USING HREM AND CBED. By I.Bastow, P.Goodman, Whitfield, H.J: Division of Chemical Physics, CSIRO, Australia, and A.Olsen, Physics Department, University of Oslo, Norway.

It has generally been held that a single β-phase with relatively high stacking-fault energy exists for GaS. in contrast to the polytypism of GaSe which arises from alternative stacking sequencing (Basinsky, Z.S., Dove, D. and Mooser, E (1963) J. App. Phys. 34, 469).

In order to resolve conflicting evidence more recently obtained from several sources (e.g. Zeil, J.P. Meixner, A.E. and Kasper, H.M. (1973) Sol. State Comm., 12, 1213), microcrystals of GaS prepared without high-temperature annealing were studied by a combination of CBED and HREM.

As a result a polytype, previously described as a high pressure form (d'Armour, H., Holzapfel, W.B., Polian, A. and Chevy, A. (1982). Sol. State Comm., 44, 853) was identified as a major constituent. This phase, unlike the β-phase , appears to have a relatively low stacking-fault energy. The common Buerger's vector was identified by CBED analysis, while the stacking sequence of the majority component was determined from HREM images.

It was concluded that GaS has (at least) two stable polytypes, which differ from those of GaSe in incorporating relative rotations between the structural layers.

20.3-3 OD-FAMILY $RAl_3(BO_3)_4$(R=Y,Nd,Gd) AND ITS MDO-POLyTyPES. By E.L.Belokoneva, T.I.Timtschenko, Geological Faculty of the Moscow State University, 117234, Moscow, USSR.

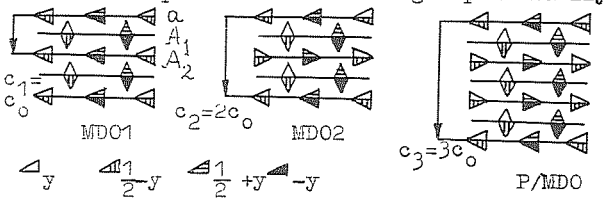
Three structures were found for borates $RAl_3(BO_3)_4$(R=Y,Nd,Gd): one rombohedral and two monoclinic existing at different temperatures. The structures may be considered consisting of two kinds of layers ($A_{1,2}$) wich are parallel to one of the rombohedral plane in the rombohedral structure and parallel to the plane ab in two other monoclinic structures (Belokoneva, Timtschenko, Kristallographiya (1983), 28, 1118, Zvyagin, Belokoneva, Kristallographiya (1984), 29,) Symbols for OD-groupoid family of category IY (Dornberger-Schiff, Acta Cryst. (1982), A38, 483, Dornberger-Schiff, Grell, Acta Cryst. (1982), A38, 491) may be indicated as

$$\overset{A_1}{[Al_2B_2O_{10}]} \qquad \overset{A_2}{[RAlB_2O_{10}]}$$

C12/m(1) C12(1)

$[1\ 2\ (1)]$ $[1 \overset{2}{=} (1)]$

Schematic representation of OD-groupoid family



20.3-4 STRUCTURES OF POLYTYPE CELLS OF CdI_2 AND THEIR FORMATION DURING GROWTH. By S. Gierlotka and B. Pałosz

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It has been suggested that polytypes are multiphase structures intermediate between simple basic structures [Pałosz, B. Phys. Stat. Sol. (a) 80, 11-42 (1983)]. On the basis of this approach some general rules of construction of polytype cells (structural series) have been derived [Pałosz, B. Acta Cryst. B38 3001-3009 (1982)] and next they were succesfully used for identification of tens of polytypes of CdI_2 [e.g. Gierlotka, S. and Pałosz, B. Acta Cryst. (1984) submitted] and SnS_2 [Pałosz, B., Pałosz, W. and Gierlotka, S. Acta Cryst (1984) submitted]. In the present study the structures of more than 200 large period polytypes found in solution grown CdI_2 crystals were analyzed. Several different alcohols were used as solvents. It was found that: (i) about 70% of polytypes grown from n-propyl and isobutyl alcoholic solutions have two-phase 2H-4H structures (structures intermediate between 2H and 4H, see structural series S I and SII; Pałosz, B. Acta Cryst. B38 3001-3009 (1982)] and (ii) 74% of polytypes grown from isoamyl alcohol solutions have one-phase structure $4H_a$-$4H_b$, where $4H_a$ and $4H_b$ represent the same basic structures 4H but oriented differently (c.f. structural series SIII and SIV [Pałosz, B. Phys. Stat. Sol. (a) 80, 11-42 (1983)].