

$pm2a$

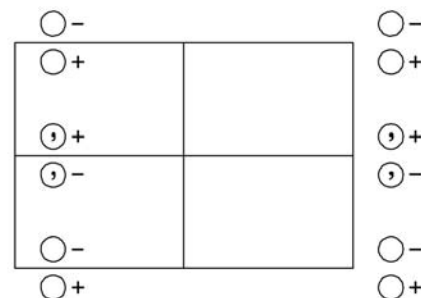
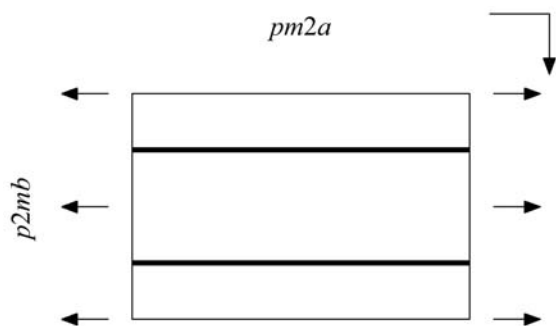
$m2m$

Orthorhombic/Rectangular

No. 31

$pm2a$

Patterson symmetry  $pmmm$



Origin on  $12a$

Asymmetric unit  $0 \leq x \leq \frac{1}{4}; 0 \leq y \leq 1$

Symmetry operations

- |             |                           |                                     |                                     |
|-------------|---------------------------|-------------------------------------|-------------------------------------|
| (1) 1       | (2) 2 $0, y, 0$           | (3) $a$ $x, y, 0$                   | (4) $m$ $\frac{1}{4}, y, z$         |
| (1 0, 0, 0) | (2 <sub>y</sub>  0, 0, 0) | (m <sub>z</sub>  \frac{1}{2}, 0, 0) | (m <sub>x</sub>  \frac{1}{2}, 0, 0) |

**Generators selected** (1);  $t(1,0,0)$ ;  $t(0,1,0)$ ; (2); (3)

**Positions**

Multiplicity,  
Wyckoff letter,  
Site symmetry

Coordinates

Reflection conditions

4 *c* 1 (1)  $x, y, z$  (2)  $\bar{x}, y, \bar{z}$  (3)  $x + \frac{1}{2}, y, \bar{z}$  (4)  $\bar{x} + \frac{1}{2}, y, z$

General:

$$hk: h = 2n$$

$$h0: h = 2n$$

Special: no extra conditions

2 *b*  $m..$   $\frac{1}{4}, y, z$   $\frac{3}{4}, y, \bar{z}$

2 *a*  $.2.$   $0, y, 0$   $\frac{1}{2}, y, 0$

**Symmetry of special projections**

Along [001]  $p1m1$

$$\mathbf{a}' = \frac{1}{2}\mathbf{a} \quad \mathbf{b}' = \mathbf{b}$$

Origin at 0, 0,  $z$

Along [100]  $\not p11m$

$$\mathbf{a}' = \mathbf{b}$$

Origin at  $x, 0, 0$

Along [010]  $\not p2mg$

$$\mathbf{a}' = \mathbf{a}$$

Origin at 0,  $y, 0$

**Maximal non-isotypic subgroups**

**I** [2]  $pm11$  (11) 1; 4

[2]  $p121$  ( $p211$ , 8) 1; 2

[2]  $p11a$  (5) 1; 3

**IIa** none

**IIb** [2]  $pb2n$  ( $\mathbf{b}' = 2\mathbf{b}$ ) (34); [2]  $pb2_a$  ( $\mathbf{b}' = 2\mathbf{b}$ ) (33); [2]  $pm2_n$  ( $\mathbf{b}' = 2\mathbf{b}$ ) (32)

**Maximal isotypic subgroups of lowest index**

**IIc** [2]  $pm2a$  ( $\mathbf{b}' = 2\mathbf{b}$ ) (31); [3]  $pm2a$  ( $\mathbf{a}' = 3\mathbf{a}$ ) (31)

**Minimal non-isotypic supergroups**

**I** [2]  $pmaa$  (38); [2]  $pmma$  (41)

**II** [2]  $cm2e$  (36); [2]  $pm2m$  ( $\mathbf{a}' = \frac{1}{2}\mathbf{a}$ ) (27)