

$Pm$

$C_s^1$

$m$

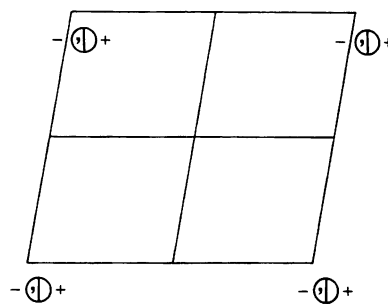
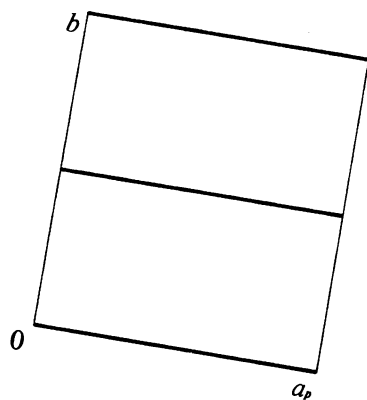
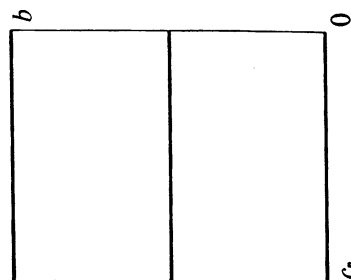
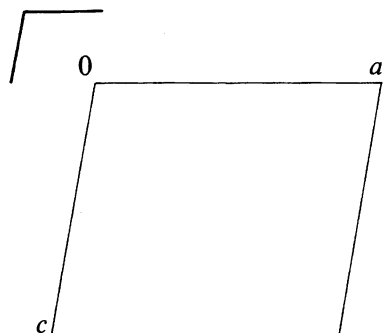
Monoclinic

No. 6

$P1m1$

Patterson symmetry  $P12/m1$

UNIQUE AXIS  $b$



**Origin** on mirror plane  $m$

**Asymmetric unit**  $0 \leq x \leq 1; 0 \leq y \leq \frac{1}{2}; 0 \leq z \leq 1$

**Symmetry operations**

- (1) 1            (2)  $m \ x, 0, z$

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

**Positions**

Multiplicity, Wyckoff letter, Site symmetry		Coordinates	Reflection conditions
2 <i>c</i> 1	(1) $x,y,z$	(2) $x,\bar{y},z$	General: no conditions  Special: no extra conditions
1 <i>b</i> <i>m</i>	$x, \frac{1}{2}, z$		
1 <i>a</i> <i>m</i>	$x, 0, z$		

**Symmetry of special projections**

Along [001] <i>p</i> 1 1 <i>m</i> $\mathbf{a}' = \mathbf{a}_p$ $\mathbf{b}' = \mathbf{b}$ Origin at 0, 0, $z$	Along [100] <i>p</i> 1 <i>m</i> 1 $\mathbf{a}' = \mathbf{b}$ $\mathbf{b}' = \mathbf{c}_p$ Origin at $x, 0, 0$	Along [010] <i>p</i> 1 $\mathbf{a}' = \mathbf{c}$ $\mathbf{b}' = \mathbf{a}$ Origin at 0, $y, 0$
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**Maximal non-isomorphic subgroups**

**I** [2] *P* 1 (1) 1

**IIa** none

**IIb** [2] *P* 1 *c* 1 ( $\mathbf{c}' = 2\mathbf{c}$ ) (*Pc*, 7); [2] *P* 1 *a* 1 ( $\mathbf{a}' = 2\mathbf{a}$ ) (*Pc*, 7); [2] *B* 1 *e* 1 ( $\mathbf{a}' = 2\mathbf{a}, \mathbf{c}' = 2\mathbf{c}$ ) (*Pc*, 7); [2] *C* 1 *m* 1 ( $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$ ) (*Cm*, 8); [2] *A* 1 *m* 1 ( $\mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$ ) (*Cm*, 8); [2] *F* 1 *m* 1 ( $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$ ) (*Cm*, 8)

**Maximal isomorphic subgroups of lowest index**

**IIc** [2] *P* 1 *m* 1 ( $\mathbf{b}' = 2\mathbf{b}$ ) (*Pm*, 6); [2] *P* 1 *m* 1 ( $\mathbf{c}' = 2\mathbf{c}$  or  $\mathbf{a}' = 2\mathbf{a}$  or  $\mathbf{a}' = \mathbf{a} + \mathbf{c}, \mathbf{c}' = -\mathbf{a} + \mathbf{c}$ ) (*Pm*, 6)

**Minimal non-isomorphic supergroups**

**I** [2] *P* 2/*m* (10); [2] *P* 2<sub>1</sub>/*m* (11); [2] *P* *m* *m* 2 (25); [2] *P* *m* *c* 2<sub>1</sub> (26); [2] *P* *m* *a* 2 (28); [2] *P* *m* *n* 2<sub>1</sub> (31); [2] *A* *m* *m* 2 (38); [2] *A* *m* *a* 2 (40); [3] *P*  $\bar{6}$  (174)

**II** [2] *C* 1 *m* 1 (*Cm*, 8); [2] *A* 1 *m* 1 (*Cm*, 8); [2] *I* 1 *m* 1 (*Cm*, 8)

$Pm$

No. 6

$C_s^1$

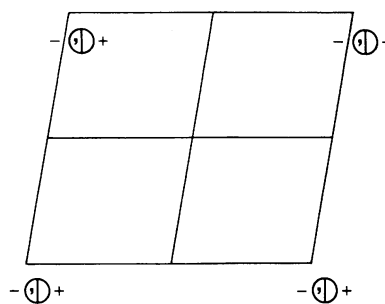
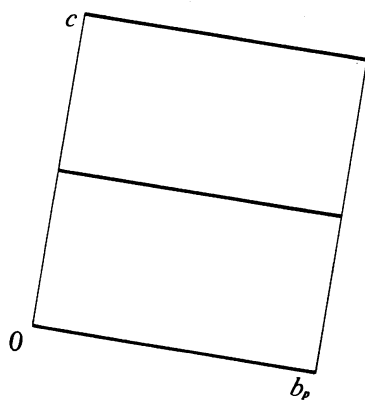
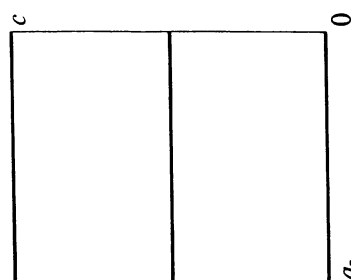
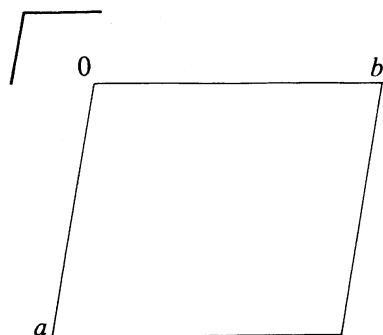
$P11m$

$m$

Monoclinic

Patterson symmetry  $P112/m$

UNIQUE AXIS  $c$



**Origin** on mirror plane  $m$

**Asymmetric unit**  $0 \leq x \leq 1; 0 \leq y \leq 1; 0 \leq z \leq \frac{1}{2}$

**Symmetry operations**

(1) 1      (2)  $m \ x,y,0$

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

**Positions**

Multiplicity, Wyckoff letter, Site symmetry	Coordinates	Reflection conditions
2 <i>c</i> 1	(1) $x,y,z$ (2) $x,y,\bar{z}$	General: no conditions  Special: no extra conditions
1 <i>b</i> <i>m</i>	$x,y,\frac{1}{2}$	
1 <i>a</i> <i>m</i>	$x,y,0$	

**Symmetry of special projections**

Along [001] <i>p</i> 1 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$ Origin at 0, 0, $z$	Along [100] <i>p</i> 1 1 <i>m</i> $\mathbf{a}' = \mathbf{b}_p$ $\mathbf{b}' = \mathbf{c}$ Origin at $x, 0, 0$	Along [010] <i>p</i> 1 <i>m</i> 1 $\mathbf{a}' = \mathbf{c}$ $\mathbf{b}' = \mathbf{a}_p$ Origin at 0, $y, 0$
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**Maximal non-isomorphic subgroups**

**I** [2] *P*1 (1) 1

**IIa** none

**IIb** [2] *P*1 1 *a* ( $\mathbf{a}' = 2\mathbf{a}$ ) (*Pc*, 7); [2] *P*1 1 *b* ( $\mathbf{b}' = 2\mathbf{b}$ ) (*Pc*, 7); [2] *C*1 1 *e* ( $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$ ) (*Pc*, 7); [2] *A*1 1 *m* ( $\mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$ ) (*Cm*, 8); [2] *B*1 1 *m* ( $\mathbf{a}' = 2\mathbf{a}, \mathbf{c}' = 2\mathbf{c}$ ) (*Cm*, 8); [2] *F*1 1 *m* ( $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$ ) (*Cm*, 8)

**Maximal isomorphic subgroups of lowest index**

**IIc** [2] *P*1 1 *m* ( $\mathbf{c}' = 2\mathbf{c}$ ) (*Pm*, 6); [2] *P*1 1 *m* ( $\mathbf{a}' = 2\mathbf{a}$  or  $\mathbf{b}' = 2\mathbf{b}$  or  $\mathbf{a}' = \mathbf{a} - \mathbf{b}, \mathbf{b}' = \mathbf{a} + \mathbf{b}$ ) (*Pm*, 6)

**Minimal non-isomorphic supergroups**

**I** [2] *P*2/*m* (10); [2] *P*2<sub>1</sub>/*m* (11); [2] *Pmm*2 (25); [2] *Pmc*2<sub>1</sub> (26); [2] *Pma*2 (28); [2] *Pmn*2<sub>1</sub> (31); [2] *Amm*2 (38); [2] *Ama*2 (40); [3] *P* $\bar{6}$  (174)

**II** [2] *A*1 1 *m* (*Cm*, 8); [2] *B*1 1 *m* (*Cm*, 8); [2] *I*1 1 *m* (*Cm*, 8)