

pmam

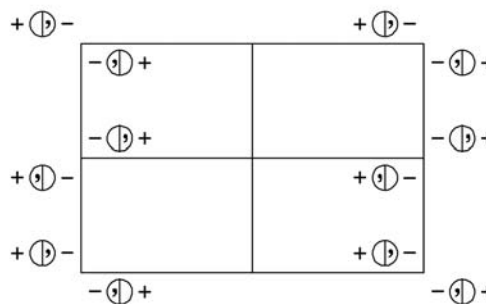
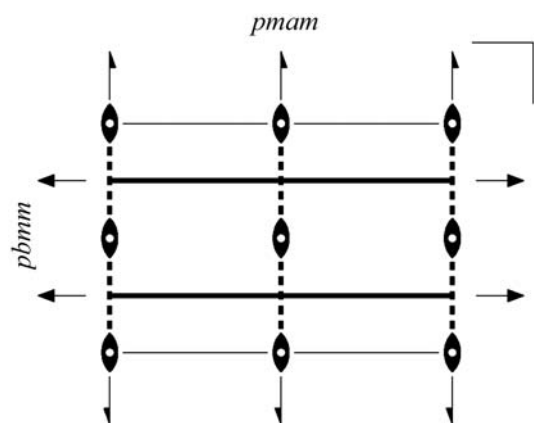
mmm

Orthorhombic/Rectangular

No. 40

$p2_1/m2/a2/m$

Patterson symmetry *pmmm*



Origin at centre ($2/m$) at $2_1a2/m$

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

Symmetry operations

- | | | | |
|--|--|--|---|
| (1) 1
(1 0,0,0) | (2) $2 \frac{1}{4}, y, 0$
($2_y \frac{1}{2}, 0, 0$) | (3) $2 \ 0, 0, z$
($2_z 0, 0, 0$) | (4) $2(\frac{1}{2}, 0, 0) \ x, 0, 0$
($2_x \frac{1}{2}, 0, 0$) |
| (5) $\bar{1} \ 0, 0, 0$
($\bar{1} 0, 0, 0$) | (6) $a \ x, 0, z$
($m_y \frac{1}{2}, 0, 0$) | (7) $m \ x, y, 0$
($m_z 0, 0, 0$) | (8) $m \ \frac{1}{4}, y, z$
($m_x \frac{1}{2}, 0, 0$) |

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; (2); (3); (5)

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates				Reflection conditions
8 <i>h</i> 1	(1) x, y, z (5) $\bar{x}, \bar{y}, \bar{z}$	(2) $\bar{x} + \frac{1}{2}, y, \bar{z}$ (6) $x + \frac{1}{2}, \bar{y}, z$	(3) \bar{x}, \bar{y}, z (7) x, y, \bar{z}	(4) $x + \frac{1}{2}, \bar{y}, \bar{z}$ (8) $\bar{x} + \frac{1}{2}, y, z$	General: $h0: h = 2n$ Special: as above, plus
4 <i>g</i> $m..$	$\frac{1}{4}, y, z$	$\frac{1}{4}, y, \bar{z}$	$\frac{3}{4}, \bar{y}, z$	$\frac{3}{4}, \bar{y}, \bar{z}$	no extra conditions
4 <i>f</i> $..m$	$x, y, 0$	$\bar{x} + \frac{1}{2}, y, 0$	$\bar{x}, \bar{y}, 0$	$x + \frac{1}{2}, \bar{y}, 0$	no extra conditions
4 <i>e</i> $..2$	$0, \frac{1}{2}, z$	$\frac{1}{2}, \frac{1}{2}, \bar{z}$	$0, \frac{1}{2}, \bar{z}$	$\frac{1}{2}, \frac{1}{2}, z$	$hk: h = 2n$
4 <i>d</i> $..2$	$0, 0, z$	$\frac{1}{2}, 0, \bar{z}$	$0, 0, \bar{z}$	$\frac{1}{2}, 0, z$	$hk: h = 2n$
2 <i>c</i> $m2m$	$\frac{1}{4}, y, 0$	$\frac{3}{4}, \bar{y}, 0$			no extra conditions
2 <i>b</i> $..2/m$	$0, \frac{1}{2}, 0$	$\frac{1}{2}, \frac{1}{2}, 0$			$hk: h = 2n$
2 <i>a</i> $..2/m$	$0, 0, 0$	$\frac{1}{2}, 0, 0$			$hk: h = 2n$

Symmetry of special projections

Along [001] $p2mg$

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

Origin at $0, 0, z$

Along [100] $\not p2mm$

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

Origin at $x, 0, 0$

Along [010] $\not p2mm$

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

Origin at $0, y, 0$

Maximal non-isotypic subgroups

I	[2] $p2_1am$ ($pb2_1m, 29$)	1; 4; 6; 7
	[2] $pm2m$ (27)	1; 2; 7; 8
	[2] $pma2$ (24)	1; 3; 6; 8
	[2] $p2_122$ (20)	1; 2; 3; 4
	[2] $p12/a1$ ($p2/b11, 16$)	1; 2; 5; 6
	[2] $p2_1/m11$ (15)	1; 4; 5; 8
	[2] $p112/m$ (6)	1; 3; 5; 7

IIa none

IIb [2] $pmab$ ($\mathbf{b}' = 2\mathbf{b}$) ($pbma, 45$); [2] $pbam$ ($\mathbf{b}' = 2\mathbf{b}$) (44); [2] $pbab$ ($\mathbf{b}' = 2\mathbf{b}$) ($pbaa, 43$)

Maximal isotypic subgroups of lowest index

IIc [2] $pmam$ ($\mathbf{b}' = 2\mathbf{b}$) (40); [3] $pmam$ ($\mathbf{a}' = 3\mathbf{a}$) (40)

Minimal non-isotypic supergroups

I none

II [2] $cmmm$ (47); [2] $pmmm$ ($\mathbf{b}' = \frac{1}{2}\mathbf{b}$) (37)