

$pmma$

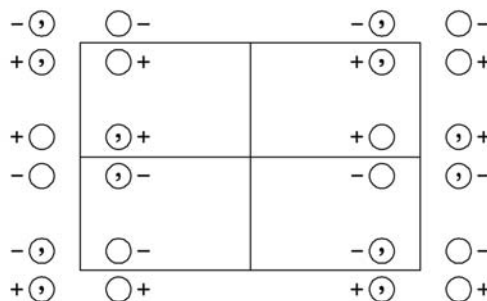
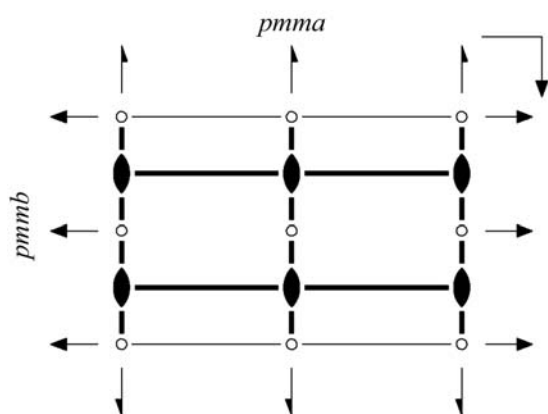
mmm

Orthorhombic/Rectangular

No. 41

$p2_1/m2/m2/a$

Patterson symmetry $pmmm$



Origin at centre ($2/m$) at $2_12/ma$

Asymmetric unit $0 \leq x \leq \frac{1}{4}; 0 \leq y \leq \frac{1}{2}$

Symmetry operations

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

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

Positions

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

Symmetry of special projections

Along [001] $p2mm$
 $\mathbf{a}' = \frac{1}{2}\mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at 0, 0, z

Along [100] $\not\neq 2mm$
 $\mathbf{a}' = \mathbf{b}$
 Origin at x, 0, 0

Along [010] $\not\neq 2mg$
 $\mathbf{a}' = \mathbf{a}$
 Origin at 0, y, 0

Maximal non-isotypic subgroups

I	[2] $pm2a$ (31)	1; 3; 6; 8
	[2] $p2_1ma$ ($pm2_1b$, 28)	1; 4; 6; 7
	[2] $pmm2$ (23)	1; 2; 7; 8
	[2] $p2_122$ (20)	1; 2; 3; 4
	[2] $p2_1/m11$ (15)	1; 4; 5; 8
	[2] $p12/m1$ ($p2/m11$, 14)	1; 3; 5; 7
	[2] $p112/a$ (7)	1; 2; 5; 6

IIa none

IIb [2] $pmmn$ ($\mathbf{b}' = 2\mathbf{b}$) (46); [2] $pbma$ ($\mathbf{b}' = 2\mathbf{b}$) (45); [2] $pbmn$ ($\mathbf{b}' = 2\mathbf{b}$) ($pman$, 42)

Maximal isotypic subgroups of lowest index

IIc [2] $pmma$ ($\mathbf{b}' = 2\mathbf{b}$) (41); [3] $pmma$ ($\mathbf{a}' = 3\mathbf{a}$) (41)

Minimal non-isotypic supergroups

I none

II [2] $cmme$ (48); [2] $pmmm$ ($\mathbf{b}' = \frac{1}{2}\mathbf{b}$) (37)