

Pmma

D_{2h}^5

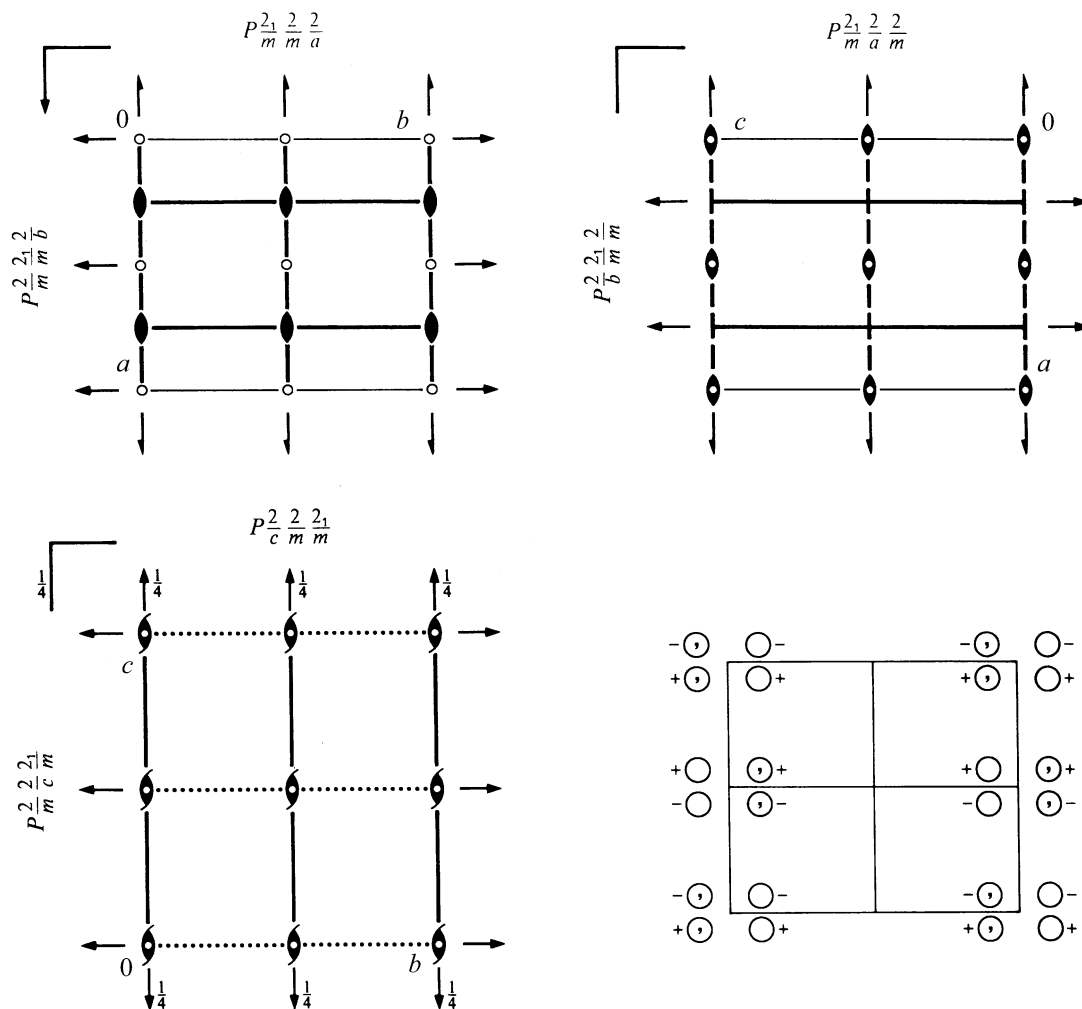
mmm

Orthorhombic

No. 51

$P 2_1/m 2/m 2/a$

Patterson symmetry *Pmmm*



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

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

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

Positions

Multiplicity, Wyckoff letter, Site symmetry		Coordinates				Reflection conditions
8	<i>l</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) $\bar{x} + \frac{1}{2}, y, z$	General: $hk0: h = 2n$ $h00: h = 2n$ Special: as above, plus no extra conditions
4	<i>k</i> <i>m</i> . .	$\frac{1}{4}, y, z$	$\frac{1}{4}, \bar{y}, z$	$\frac{3}{4}, y, \bar{z}$	$\frac{3}{4}, \bar{y}, \bar{z}$	no extra conditions
4	<i>j</i> . <i>m</i> .	$x, \frac{1}{2}, z$	$\bar{x} + \frac{1}{2}, \frac{1}{2}, z$	$\bar{x}, \frac{1}{2}, \bar{z}$	$x + \frac{1}{2}, \frac{1}{2}, \bar{z}$	no extra conditions
4	<i>i</i> . <i>m</i> .	$x, 0, z$	$\bar{x} + \frac{1}{2}, 0, z$	$\bar{x}, 0, \bar{z}$	$x + \frac{1}{2}, 0, \bar{z}$	no extra conditions
4	<i>h</i> . 2 .	$0, y, \frac{1}{2}$	$\frac{1}{2}, \bar{y}, \frac{1}{2}$	$0, \bar{y}, \frac{1}{2}$	$\frac{1}{2}, y, \frac{1}{2}$	$hkl: h = 2n$
4	<i>g</i> . 2 .	$0, y, 0$	$\frac{1}{2}, \bar{y}, 0$	$0, \bar{y}, 0$	$\frac{1}{2}, y, 0$	$hkl: h = 2n$
2	<i>f</i> <i>m m</i> 2	$\frac{1}{4}, \frac{1}{2}, z$	$\frac{3}{4}, \frac{1}{2}, \bar{z}$			no extra conditions
2	<i>e</i> <i>m m</i> 2	$\frac{1}{4}, 0, z$	$\frac{3}{4}, 0, \bar{z}$			no extra conditions
2	<i>d</i> . 2/ <i>m</i> .	$0, \frac{1}{2}, \frac{1}{2}$	$\frac{1}{2}, \frac{1}{2}, \frac{1}{2}$			$hkl: h = 2n$
2	<i>c</i> . 2/ <i>m</i> .	$0, 0, \frac{1}{2}$	$\frac{1}{2}, 0, \frac{1}{2}$			$hkl: h = 2n$
2	<i>b</i> . 2/ <i>m</i> .	$0, \frac{1}{2}, 0$	$\frac{1}{2}, \frac{1}{2}, 0$			$hkl: h = 2n$
2	<i>a</i> . 2/ <i>m</i> .	$0, 0, 0$	$\frac{1}{2}, 0, 0$			$hkl: h = 2n$

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] $p2mm$
 $\mathbf{a}' = \mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, 0, 0$

Along [010] $p2gm$
 $\mathbf{a}' = \mathbf{c}$ $\mathbf{b}' = \mathbf{a}$
 Origin at 0, $y, 0$