

$P4bm$

C_{4v}^2

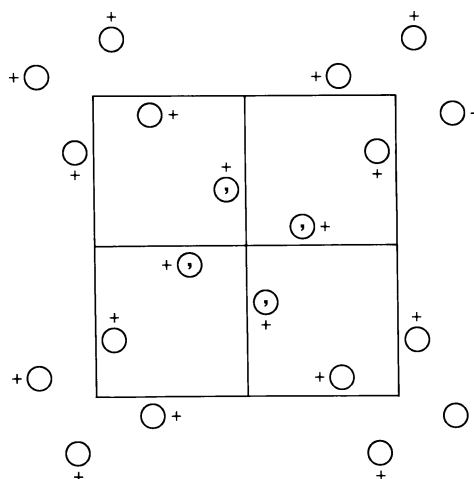
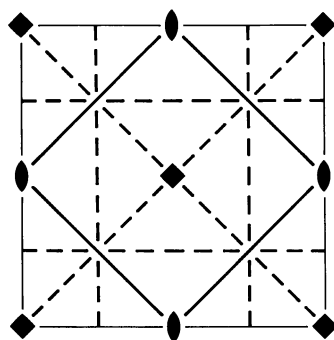
$4mm$

Tetragonal

No. 100

$P4bm$

Patterson symmetry $P4/mmm$



Origin on $41g$

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

Symmetry operations

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

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 $d\ 1$	(1) x, y, z (2) \bar{x}, \bar{y}, z (3) \bar{y}, x, z (4) y, \bar{x}, z (5) $x + \frac{1}{2}, \bar{y} + \frac{1}{2}, z$ (6) $\bar{x} + \frac{1}{2}, y + \frac{1}{2}, z$ (7) $\bar{y} + \frac{1}{2}, \bar{x} + \frac{1}{2}, z$ (8) $y + \frac{1}{2}, x + \frac{1}{2}, z$	General: $0kl: k = 2n$ $h00: h = 2n$
4 $c\ \dots m$	$x, x + \frac{1}{2}, z$ $\bar{x}, \bar{x} + \frac{1}{2}, z$ $\bar{x} + \frac{1}{2}, x, z$ $x + \frac{1}{2}, \bar{x}, z$	Special: as above, plus no extra conditions
2 $b\ 2 \dots mm$	$\frac{1}{2}, 0, z$ $0, \frac{1}{2}, z$	$hkl: h + k = 2n$
2 $a\ 4 \dots$	$0, 0, z$ $\frac{1}{2}, \frac{1}{2}, z$	$hkl: h + k = 2n$

Symmetry of special projections

Along $[001]\ p4gm$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, 0, z$

Along $[100]\ p1m1$
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, 0, 0$

Along $[110]\ p1m1$
 $\mathbf{a}' = \frac{1}{2}(-\mathbf{a} + \mathbf{b})$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, x, 0$