

Tetragonal

$4mm$

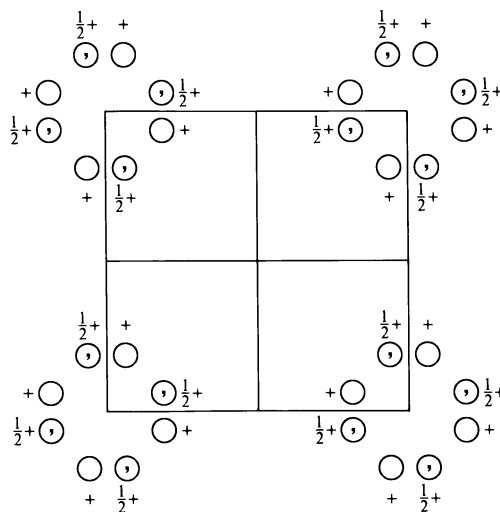
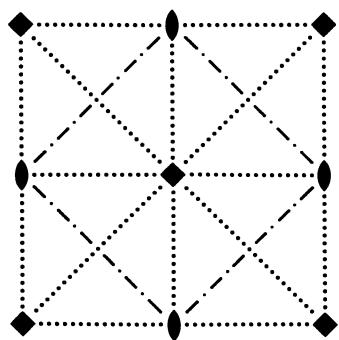
C_{4v}^5

$P4cc$

Patterson symmetry $P4/mmm$

$P4cc$

No. 103



Origin on $4c$

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

Symmetry operations

- (1) 1 (2) 2 $0,0,z$ (3) 4^+ $0,0,z$ (4) 4^- $0,0,z$
 (5) c $x,0,z$ (6) c $0,y,z$ (7) c x,\bar{x},z (8) c 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 <i>d</i> 1	(1) x,y,z (2) \bar{x},\bar{y},z (3) \bar{y},x,z (4) y,\bar{x},z (5) $x,\bar{y},z+\frac{1}{2}$ (6) $\bar{x},y,z+\frac{1}{2}$ (7) $\bar{y},\bar{x},z+\frac{1}{2}$ (8) $y,x,z+\frac{1}{2}$	General: $0kl: l = 2n$ $hhl: l = 2n$ $00l: l = 2n$
4 <i>c</i> 2..	$0, \frac{1}{2}, z$ $\frac{1}{2}, 0, z$ $0, \frac{1}{2}, z + \frac{1}{2}$ $\frac{1}{2}, 0, z + \frac{1}{2}$	Special: as above, plus $hkl: h+k, l = 2n$
2 <i>b</i> 4..	$\frac{1}{2}, \frac{1}{2}, z$ $\frac{1}{2}, \frac{1}{2}, z + \frac{1}{2}$	$hkl: l = 2n$
2 <i>a</i> 4..	$0, 0, z$ $0, 0, z + \frac{1}{2}$	$hkl: l = 2n$

Symmetry of special projections

Along $[001]$ $p4mm$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0,0,z$

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

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