

Tetragonal

$4mm$

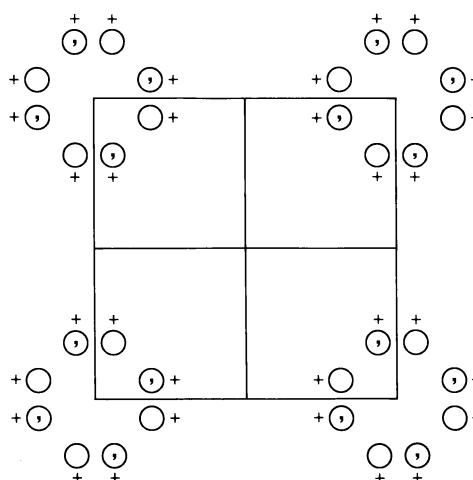
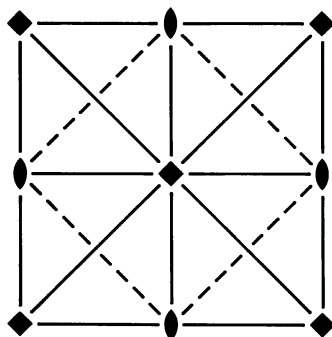
C_{4v}^1

$P4mm$

Patterson symmetry $P4/mmm$

$P4mm$

No. 99



Origin on $4mm$

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

Symmetry operations

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

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>g</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 (6) \bar{x},y,z (7) \bar{y},\bar{x},z (8) y,x,z | General: no conditions Special: |
| 4 <i>f</i> . <i>m</i> . | $x, \frac{1}{2}, z$ $\bar{x}, \frac{1}{2}, z$ $\frac{1}{2}, x, z$ $\frac{1}{2}, \bar{x}, z$ | no extra conditions |
| 4 <i>e</i> . <i>m</i> . | $x, 0, z$ $\bar{x}, 0, z$ $0, x, z$ $0, \bar{x}, z$ | no extra conditions |
| 4 <i>d</i> .. <i>m</i> | x, x, z \bar{x}, \bar{x}, z \bar{x}, x, z x, \bar{x}, z | no extra conditions |
| 2 <i>c</i> 2 <i>m</i> <i>m</i> . | $\frac{1}{2}, 0, z$ $0, \frac{1}{2}, z$ | <i>hkl</i> : $h+k=2n$ |
| 1 <i>b</i> 4 <i>m</i> <i>m</i> | $\frac{1}{2}, \frac{1}{2}, z$ | no extra conditions |
| 1 <i>a</i> 4 <i>m</i> <i>m</i> | $0, 0, z$ | no extra conditions |

Symmetry of special projections

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

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

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