

Tetragonal

$4mm$

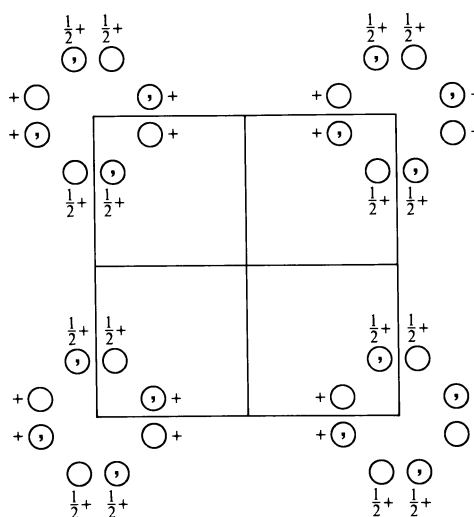
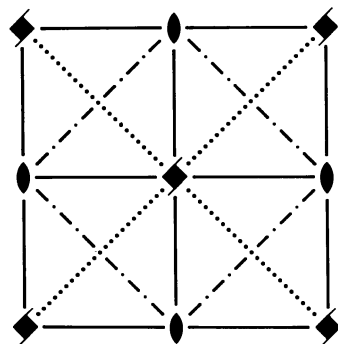
C_{4v}^7

$P4_2mc$

Patterson symmetry $P4/mmm$

$P4_2mc$

No. 105



Origin on $2mm$ on 4_2mc

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) $4^+(0,0,\frac{1}{2})\ 0,0,z$ (4) $4^-(0,0,\frac{1}{2})\ 0,0,z$
 (5) $m\ x,0,z$ (6) $m\ 0,y,z$ (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>f</i> 1 | (1) x,y,z (2) \bar{x},\bar{y},z (3) $\bar{y},x,z+\frac{1}{2}$ (4) $y,\bar{x},z+\frac{1}{2}$ (5) x,\bar{y},z (6) \bar{x},y,z (7) $\bar{y},\bar{x},z+\frac{1}{2}$ (8) $y,x,z+\frac{1}{2}$ | General: $hhl: l = 2n$ $00l: l = 2n$ |
| 4 <i>e</i> $.m.$ | $x,\frac{1}{2},z$ $\bar{x},\frac{1}{2},z$ $\frac{1}{2},x,z+\frac{1}{2}$ $\frac{1}{2},\bar{x},z+\frac{1}{2}$ | Special: as above, plus no extra conditions |
| 4 <i>d</i> $.m.$ | $x,0,z$ $\bar{x},0,z$ $0,x,z+\frac{1}{2}$ $0,\bar{x},z+\frac{1}{2}$ | no extra conditions |
| 2 <i>c</i> $2mm.$ | $0,\frac{1}{2},z$ $\frac{1}{2},0,z+\frac{1}{2}$ | $hkl: h+k+l = 2n$ |
| 2 <i>b</i> $2mm.$ | $\frac{1}{2},\frac{1}{2},z$ $\frac{1}{2},\frac{1}{2},z+\frac{1}{2}$ | $hkl: l = 2n$ |
| 2 <i>a</i> $2mm.$ | $0,0,z$ $0,0,z+\frac{1}{2}$ | $hkl: l = 2n$ |

Symmetry of special projections

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

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