

Tetragonal

$\bar{4}2m$

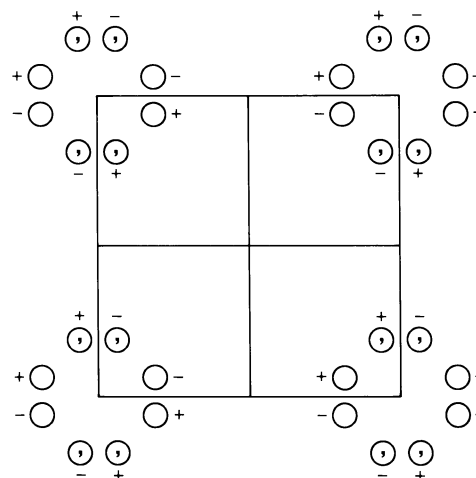
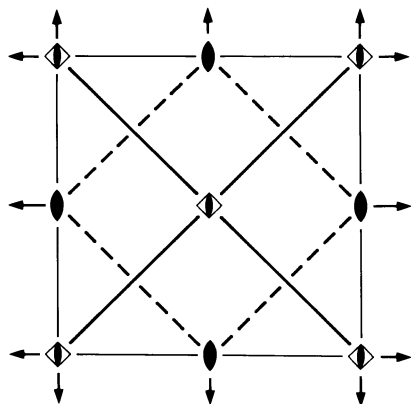
D_{2d}^1

$P\bar{4}2m$

Patterson symmetry $P4/mmm$

$P\bar{4}2m$

No. 111



Origin at $\bar{4}2m$

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) $\bar{4}^+$ $0,0,z; 0,0,0$ (4) $\bar{4}^-$ $0,0,z; 0,0,0$
 (5) 2 $0,y,0$ (6) 2 $x,0,0$ (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>o</i> 1	(1) x,y,z (2) \bar{x},\bar{y},z (3) y,\bar{x},\bar{z} (4) \bar{y},x,\bar{z} (5) \bar{x},y,\bar{z} (6) x,\bar{y},\bar{z} (7) \bar{y},\bar{x},z (8) y,x,z	General: no conditions Special: no extra conditions
4 <i>n</i> $..m$	x,x,z \bar{x},\bar{x},z x,\bar{x},\bar{z} \bar{x},x,\bar{z}	no extra conditions
4 <i>m</i> $2..$	$0,\frac{1}{2},z$ $\frac{1}{2},0,\bar{z}$ $0,\frac{1}{2},\bar{z}$ $\frac{1}{2},0,z$	$hkl: h+k=2n$
4 <i>l</i> $.2.$	$x,\frac{1}{2},0$ $\bar{x},\frac{1}{2},0$ $\frac{1}{2},\bar{x},0$ $\frac{1}{2},x,0$	no extra conditions
4 <i>k</i> $.2.$	$x,0,\frac{1}{2}$ $\bar{x},0,\frac{1}{2}$ $0,\bar{x},\frac{1}{2}$ $0,x,\frac{1}{2}$	no extra conditions
4 <i>j</i> $.2.$	$x,\frac{1}{2},\frac{1}{2}$ $\bar{x},\frac{1}{2},\frac{1}{2}$ $\frac{1}{2},\bar{x},\frac{1}{2}$ $\frac{1}{2},x,\frac{1}{2}$	no extra conditions
4 <i>i</i> $.2.$	$x,0,0$ $\bar{x},0,0$ $0,\bar{x},0$ $0,x,0$	no extra conditions
2 <i>h</i> $2.mm$	$\frac{1}{2},\frac{1}{2},z$ $\frac{1}{2},\frac{1}{2},\bar{z}$	no extra conditions
2 <i>g</i> $2.mm$	$0,0,z$ $0,0,\bar{z}$	no extra conditions
2 <i>f</i> $222.$	$\frac{1}{2},0,\frac{1}{2}$ $0,\frac{1}{2},\frac{1}{2}$	$hkl: h+k=2n$
2 <i>e</i> $222.$	$\frac{1}{2},0,0$ $0,\frac{1}{2},0$	$hkl: h+k=2n$
1 <i>d</i> $\bar{4}2m$	$\frac{1}{2},\frac{1}{2},0$	no extra conditions
1 <i>c</i> $\bar{4}2m$	$0,0,\frac{1}{2}$	no extra conditions
1 <i>b</i> $\bar{4}2m$	$\frac{1}{2},\frac{1}{2},\frac{1}{2}$	no extra conditions
1 <i>a</i> $\bar{4}2m$	$0,0,0$	no extra conditions

Symmetry of special projections

Along $[001]$ $p4mm$

$\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$

Origin at $0,0,z$

Along $[100]$ $p2mm$

$\mathbf{a}' = \mathbf{b}$ $\mathbf{b}' = \mathbf{c}$

Origin at $x,0,0$

Along $[110]$ $p1m1$

$\mathbf{a}' = \frac{1}{2}(-\mathbf{a} + \mathbf{b})$ $\mathbf{b}' = \mathbf{c}$

Origin at $x,x,0$