

Tetragonal

422

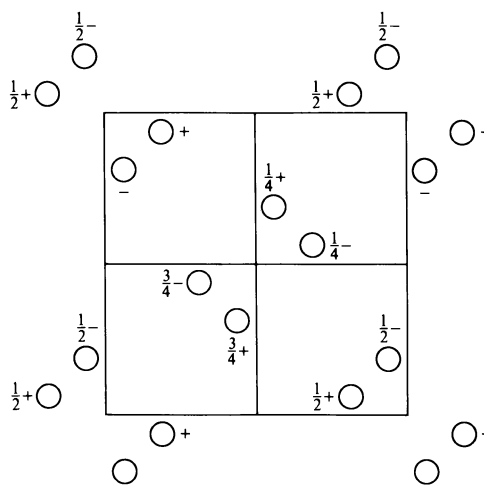
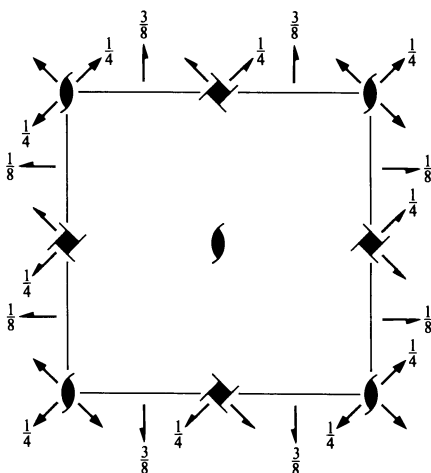
D_4^4

$P4_12_12$

Patterson symmetry $P4/mmm$

$P4_12_12$

No. 92



Origin on $2[110]$ at $2_11(1,2)$

Asymmetric unit $0 \leq x \leq 1; 0 \leq y \leq 1; 0 \leq z \leq \frac{1}{8}$

Symmetry operations

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

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>b</i> 1	(1) x,y,z (2) $\bar{x},\bar{y},z+\frac{1}{2}$ (3) $\bar{y}+\frac{1}{2},x+\frac{1}{2},z+\frac{1}{4}$ (4) $y+\frac{1}{2},\bar{x}+\frac{1}{2},z+\frac{3}{4}$ (5) $\bar{x}+\frac{1}{2},y+\frac{1}{2},\bar{z}+\frac{1}{4}$ (6) $x+\frac{1}{2},\bar{y}+\frac{1}{2},\bar{z}+\frac{3}{4}$ (7) y,x,\bar{z} (8) $\bar{y},\bar{x},\bar{z}+\frac{1}{2}$	General: $00l: l = 4n$ $h00: h = 2n$
4 <i>a</i> .. 2	$x,x,0$ $\bar{x},\bar{x},\frac{1}{2}$ $\bar{x}+\frac{1}{2},x+\frac{1}{2},\frac{1}{4}$ $x+\frac{1}{2},\bar{x}+\frac{1}{2},\frac{3}{4}$	Special: as above, plus $0kl: l = 2n + 1$ or $2k + l = 4n$

Symmetry of special projections

Along $[001]$ $p4gm$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, \frac{1}{2}, z$

Along $[100]$ $p2gg$
 $\mathbf{a}' = \mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, \frac{1}{4}, \frac{3}{8}$

Along $[110]$ $p2gm$
 $\mathbf{a}' = \frac{1}{2}(-\mathbf{a} + \mathbf{b})$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, x, 0$