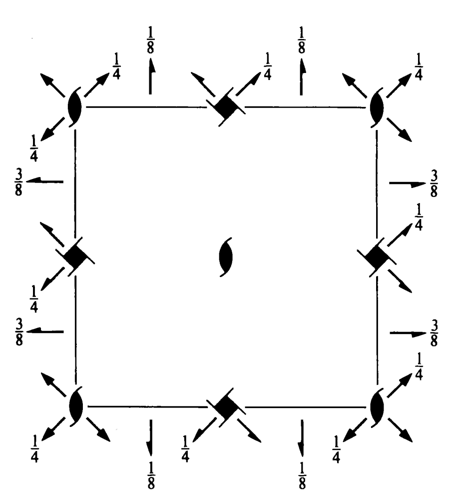
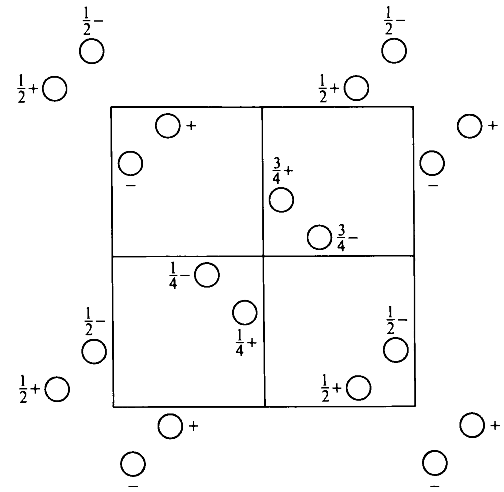
Tetragonal $\quad 422 \quad D_4^8 \quad P4_3 2_1 2$

Patterson symmetry $P4/mmm$ $\quad P4_3 2_1 2 \quad$ No. 96





Origin on $2[1\bar{1}0]$ at $2_1 1(1,2)$

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

Symmetry operations

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

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

Symmetry of special projections

Along [001] $p4gm$	Along [100] $p2gg$	Along [110] $p2gm$
$\mathbf{a}'=\mathbf{a} \quad \mathbf{b}'=\mathbf{b}$	$\mathbf{a}'=\mathbf{b} \quad \mathbf{b}'=\mathbf{c}$	$\mathbf{a}'=\frac{1}{2}(-\mathbf{a}+\mathbf{b}) \quad \mathbf{b}'=\mathbf{c}$
Origin at $0,\frac{1}{2},z$	Origin at $x,\frac{1}{4},\frac{1}{8}$	Origin at $x,x,0$

