

$P4_2bc$

C_{4v}^8

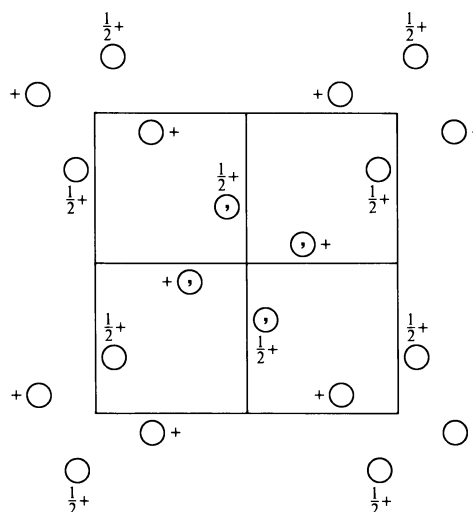
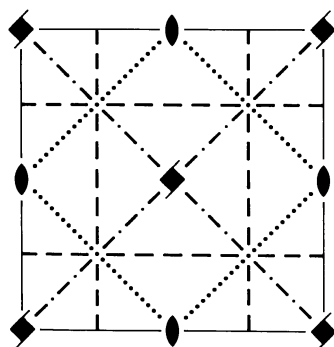
$4mm$

Tetragonal

No. 106

$P4_2bc$

Patterson symmetry $P4/mmm$



Origin on 2 on $4_2 1n$

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) $a\ x,\frac{1}{4},z$ (6) $b\ \frac{1}{4},y,z$ (7) $c\ x+\frac{1}{2},\bar{x},z$ (8) $n(\frac{1}{2},\frac{1}{2},\frac{1}{2})\ x,x,z$

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

Symmetry of special projections

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

Along $[100]$ $p1m1$
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
 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 $x,x,0$