

Tetragonal

$\bar{4}$

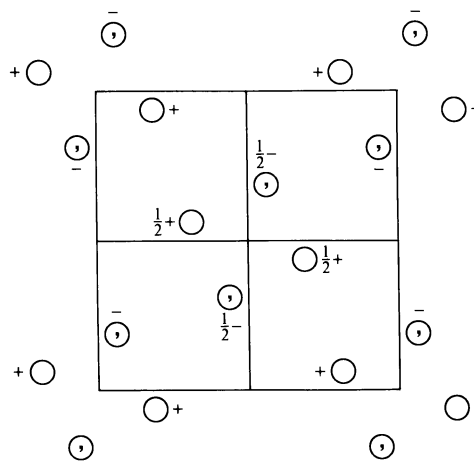
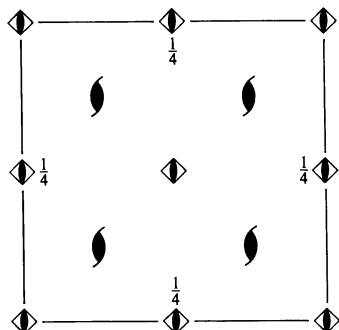
S_4^2

$I\bar{4}$

Patterson symmetry $I4/m$

$I\bar{4}$

No. 82



Origin at $\bar{4}$

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

For $(0,0,0)+$ set

- (1) 1 (2) $2\ 0,0,z$ (3) $\bar{4}^+ 0,0,z; 0,0,0$ (4) $\bar{4}^- 0,0,z; 0,0,0$

For $(\frac{1}{2},\frac{1}{2},\frac{1}{2})+$ set

- (1) $t(\frac{1}{2},\frac{1}{2},\frac{1}{2})$ (2) $2(0,0,\frac{1}{2})\ \frac{1}{4},\frac{1}{4},z$ (3) $\bar{4}^+ \frac{1}{2},0,z; \frac{1}{2},0,\frac{1}{4}$ (4) $\bar{4}^- 0,\frac{1}{2},z; 0,\frac{1}{2},\frac{1}{4}$

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; $t(\frac{1}{2},\frac{1}{2},\frac{1}{2})$; (2); (3)

Positions

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

$(0,0,0)+ (\frac{1}{2},\frac{1}{2},\frac{1}{2})+$

Reflection conditions

General:

$hkl: h+k+l=2n$
 $hk0: h+k=2n$
 $0kl: k+l=2n$
 $hhl: l=2n$
 $00l: l=2n$
 $h00: h=2n$

Special: no extra conditions

Multiplicity	Wyckoff letter	Site symmetry	(1) x,y,z	(2) \bar{x},\bar{y},z	(3) y,\bar{x},\bar{z}	(4) \bar{y},x,\bar{z}
8	<i>g</i>	1	$(1) x,y,z$	$(2) \bar{x},\bar{y},z$	$(3) y,\bar{x},\bar{z}$	$(4) \bar{y},x,\bar{z}$
4	<i>f</i>	2..	$0,\frac{1}{2},z$	$\frac{1}{2},0,\bar{z}$		
4	<i>e</i>	2..	$0,0,z$	$0,0,\bar{z}$		
2	<i>d</i>	$\bar{4}..$	$0,\frac{1}{2},\frac{3}{4}$			
2	<i>c</i>	$\bar{4}..$	$0,\frac{1}{2},\frac{1}{4}$			
2	<i>b</i>	$\bar{4}..$	$0,0,\frac{1}{2}$			
2	<i>a</i>	$\bar{4}..$	$0,0,0$			

Symmetry of special projections

Along $[001]$ $p4$

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

Origin at $0,0,z$

Along $[100]$ $c1m1$

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

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 $x,x,0$