

$\bar{4}22$

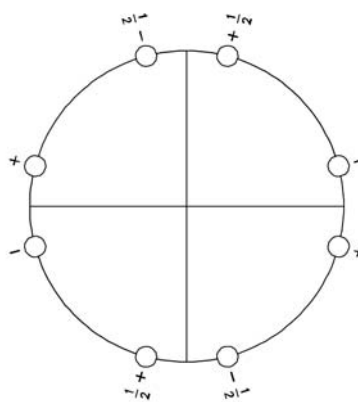
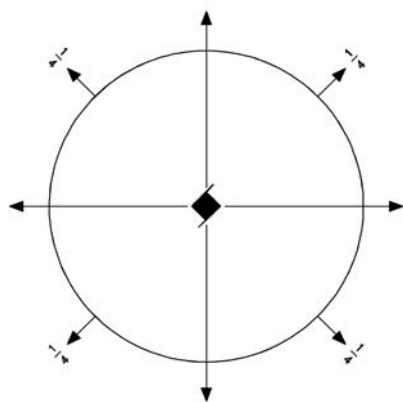
422

Tetragonal

No. 32

$\bar{4}22$

Patterson symmetry  $\bar{4}/mmm$



Origin at 222 at  $4_221$

Asymmetric unit  $0 \leq x; 0 \leq z \leq \frac{1}{4}$

Symmetry operations

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

**Generators selected** (1);  $t(0,0,1)$ ; (2); (3); (5)

**Positions**

Multiplicity, Wyckoff letter, Site symmetry	Coordinates	Reflection conditions
8 <i>h</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) $\bar{x}, y, \bar{z}$ (6) $x, \bar{y}, \bar{z}$ (7) $y, x, \bar{z} + \frac{1}{2}$ (8) $\bar{y}, \bar{x}, \bar{z} + \frac{1}{2}$	General: $l : l = 2n$  Special: no extra conditions
4 <i>g</i> . . 2	$x, x, \frac{3}{4}$ $\bar{x}, \bar{x}, \frac{3}{4}$ $\bar{x}, x, \frac{1}{4}$ $x, \bar{x}, \frac{1}{4}$	
4 <i>f</i> . . 2	$x, x, \frac{1}{4}$ $\bar{x}, \bar{x}, \frac{1}{4}$ $\bar{x}, x, \frac{3}{4}$ $x, \bar{x}, \frac{3}{4}$	
4 <i>e</i> . 2 .	$x, 0, \frac{1}{2}$ $\bar{x}, 0, \frac{1}{2}$ $0, x, 0$ $0, \bar{x}, 0$	
4 <i>d</i> . 2 .	$x, 0, 0$ $\bar{x}, 0, 0$ $0, x, \frac{1}{2}$ $0, \bar{x}, \frac{1}{2}$	
4 <i>c</i> 2 . .	$0, 0, z$ $0, 0, z + \frac{1}{2}$ $0, 0, \bar{z}$ $0, 0, \bar{z} + \frac{1}{2}$	
2 <i>b</i> 2 . 22	$0, 0, \frac{1}{4}$ $0, 0, \frac{3}{4}$	
2 <i>a</i> 2 22 .	$0, 0, 0$ $0, 0, \frac{1}{2}$	

**Symmetry of special projections**

Along [001]  $4mm$

Along [100]  $\not\propto 2mm$

Along [110]  $\not\propto 2mm$

Origin at  $0, 0, z$

$\mathbf{a}' = \mathbf{c}$   
Origin at  $x, 0, 0$

$\mathbf{a}' = \mathbf{c}$   
Origin at  $x, x, \frac{1}{4}$

**Maximal non-isotypic non-enantiomorphic subgroups**

- I** [2]  $\not\propto 4_2 11$  ( $\not\propto 4_2, 25$ ) 1; 2; 3; 4  
 [2]  $\not\propto 221$  ( $\not\propto 222, 13$ ) 1; 2; 5; 6  
 [2]  $\not\propto 212$  ( $\not\propto 222, 13$ ) 1; 2; 7; 8

**IIa** none

**IIb** [2]  $\not\propto 4_3 22$  ( $\mathbf{c}' = 2\mathbf{c}$ ) (33); [2]  $\not\propto 4_1 22$  ( $\mathbf{c}' = 2\mathbf{c}$ ) (31)

**Maximal isotypic subgroups and enantiomorphic subgroups of lowest index**

**IIc** [3]  $\not\propto 4_2 22$  ( $\mathbf{c}' = 3\mathbf{c}$ ) (32)

**Minimal non-isotypic non-enantiomorphic supergroups**

**I** [2]  $\not\propto 4_2/mmc$  (41)

**II** [2]  $\not\propto 422$  ( $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ ) (30)