

$p\bar{4}2m$

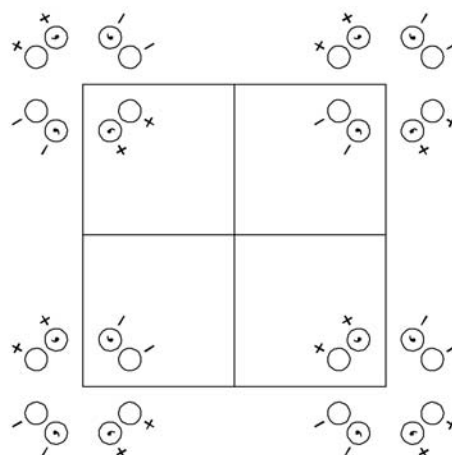
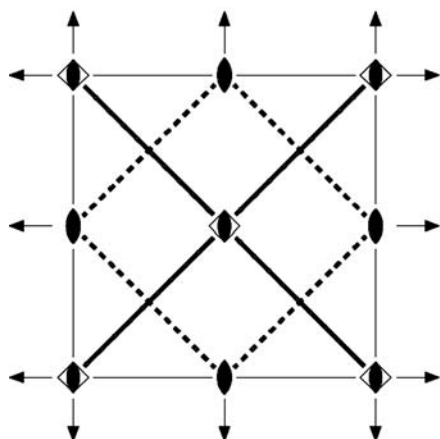
$\bar{4}2m$

Tetragonal/Square

No. 57

$p\bar{4}2m$

Patterson symmetry $p4/mmm$



Origin at $\bar{4}2m$

Asymmetric unit $0 \leq x \leq \frac{1}{2}; 0 \leq y \leq \frac{1}{2}; x \leq y$

Symmetry operations

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

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

Positions

Multiplicity, Wyckoff letter, Site symmetry		Coordinates				Reflection conditions
8	<i>j</i> 1	(1) x, y, z (5) \bar{x}, y, \bar{z}	(2) \bar{x}, \bar{y}, z (6) x, \bar{y}, \bar{z}	(3) y, \bar{x}, \bar{z} (7) \bar{y}, \bar{x}, z	(4) \bar{y}, x, \bar{z} (8) y, x, z	General: no conditions Special:
4	<i>i</i> . . <i>m</i>	x, x, z	\bar{x}, \bar{x}, z	x, \bar{x}, \bar{z}	\bar{x}, x, \bar{z}	no extra conditions
4	<i>h</i> 2 . .	$0, \frac{1}{2}, z$	$\frac{1}{2}, 0, \bar{z}$	$0, \frac{1}{2}, \bar{z}$	$\frac{1}{2}, 0, z$	$hk: h + k = 2n$
4	<i>g</i> . 2 .	$x, \frac{1}{2}, 0$	$\bar{x}, \frac{1}{2}, 0$	$\frac{1}{2}, \bar{x}, 0$	$\frac{1}{2}, x, 0$	no extra conditions
4	<i>f</i> . 2 .	$x, 0, 0$	$\bar{x}, 0, 0$	$0, \bar{x}, 0$	$0, x, 0$	no extra conditions
2	<i>e</i> 2 . <i>mm</i>	$\frac{1}{2}, \frac{1}{2}, z$	$\frac{1}{2}, \frac{1}{2}, \bar{z}$			no extra conditions
2	<i>d</i> 2 . <i>mm</i>	$0, 0, z$	$0, 0, \bar{z}$			no extra conditions
2	<i>c</i> 2 2 2 .	$\frac{1}{2}, 0, 0$	$0, \frac{1}{2}, 0$			$hk: h + k = 2n$
1	<i>b</i> $\bar{4}2m$	$\frac{1}{2}, \frac{1}{2}, 0$				no extra conditions
1	<i>a</i> $\bar{4}2m$	$0, 0, 0$				no extra conditions

Symmetry of special projections

Along [001] $p4mm$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, 0, z$

Along [100] $\not p2mm$
 $\mathbf{a}' = \mathbf{b}$
 Origin at $x, 0, 0$

Along [110] $\not p1m1$
 $\mathbf{a}' = \frac{1}{2}(-\mathbf{a} + \mathbf{b})$
 Origin at $x, x, 0$

Maximal non-isotypic subgroups

I [2] $p\bar{4}11$ ($p\bar{4}, 50$) 1; 2; 3; 4
 [2] $p21m$ ($cmm2, 26$) 1; 2; 7; 8
 [2] $p221$ ($p222, 19$) 1; 2; 5; 6

IIa none

IIb [2] $c\bar{4}2d$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) ($p\bar{4}b2, 60$); [2] $c\bar{4}2m$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) ($p\bar{4}m2, 59$)

Maximal isotypic subgroups of lowest index

IIc [9] $p\bar{4}2m$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) (57)

Minimal non-isotypic supergroups

I [2] $p4/mmm$ (61); [2] $p4/nbm$ (62)

II [2] $c\bar{4}2m$ ($p\bar{4}m2, 59$)