

$p\bar{4}2_1m$

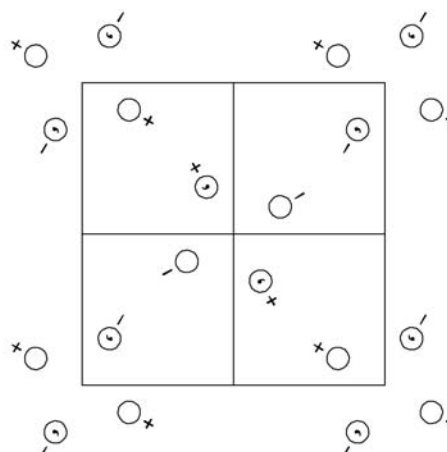
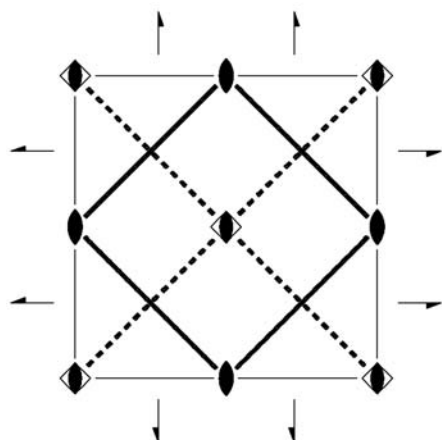
$\bar{4}2m$

Tetragonal/Square

No. 58

$p\bar{4}2_1m$

Patterson symmetry $p4/mmm$



Origin at $\bar{4}1g$

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

Symmetry operations

- | | | | |
|---|---|---|--|
| (1) 1
(1 0,0,0) | (2) 2 0,0,z
(2 _z 0,0,0) | (3) $\bar{4}^+$ 0,0,z; 0,0,0
($\bar{4}_z^+$ 0,0,0) | (4) $\bar{4}^-$ 0,0,z; 0,0,0
($\bar{4}_z^-$ 0,0,0) |
| (5) $2(0, \frac{1}{2}, 0) \frac{1}{4}, y, 0$
(2 _y $\frac{1}{2}, \frac{1}{2}, 0$) | (6) $2(\frac{1}{2}, 0, 0) x, \frac{1}{4}, 0$
(2 _x $\frac{1}{2}, \frac{1}{2}, 0$) | (7) $m x + \frac{1}{2}, \bar{x}, z$
(m_{xy} $\frac{1}{2}, \frac{1}{2}, 0$) | (8) $g(\frac{1}{2}, \frac{1}{2}, 0) x, x, z$
($m_{\bar{xy}}$ $\frac{1}{2}, \frac{1}{2}, 0$) |

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

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates				Reflection conditions
					General:
8 <i>e</i> 1	(1) x, y, z (5) $\bar{x} + \frac{1}{2}, y + \frac{1}{2}, \bar{z}$	(2) \bar{x}, \bar{y}, z (6) $x + \frac{1}{2}, \bar{y} + \frac{1}{2}, \bar{z}$	(3) y, \bar{x}, \bar{z} (7) $\bar{y} + \frac{1}{2}, \bar{x} + \frac{1}{2}, z$	(4) \bar{y}, x, \bar{z} (8) $y + \frac{1}{2}, x + \frac{1}{2}, z$	$h0: h = 2n$
4 <i>d</i> $\dots m$	$x, x + \frac{1}{2}, z$	$\bar{x}, \bar{x} + \frac{1}{2}, z$	$x + \frac{1}{2}, \bar{x}, \bar{z}$	$\bar{x} + \frac{1}{2}, x, \bar{z}$	Special: as above, plus no extra conditions
4 <i>c</i> 2 \dots	$0, 0, z$	$0, 0, \bar{z}$	$\frac{1}{2}, \frac{1}{2}, \bar{z}$	$\frac{1}{2}, \frac{1}{2}, z$	$hk: h + k = 2n$
2 <i>b</i> 2 $\dots mm$	$0, \frac{1}{2}, z$	$\frac{1}{2}, 0, \bar{z}$			$hk: h + k = 2n$
2 <i>a</i> $\bar{4}\dots$	$0, 0, 0$	$\frac{1}{2}, \frac{1}{2}, 0$			$hk: h + k = 2n$

Symmetry of special projections

Along [001] $p4gm$

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

Origin at $0, 0, z$

Along [100] $\bar{4}2mg$

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

Origin at $x, \frac{1}{4}, 0$

Along [110] $\bar{4}1m1$

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

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] $p22_11$ ($p2_12_12, 21$) 1; 2; 5; 6

IIa none

IIb none

Maximal isotypic subgroups of lowest index

IIc [9] $p\bar{4}2_1m$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) (58)

Minimal non-isotypic supergroups

I [2] $p4/mbm$ (63); [2] $p4/nmm$ (64)

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