

$P\bar{6}2m$

D_{3h}^3

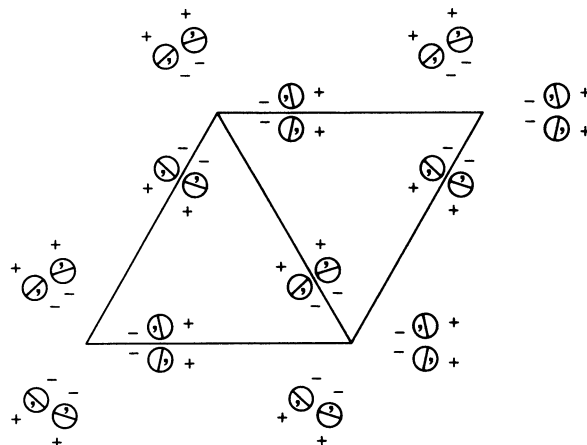
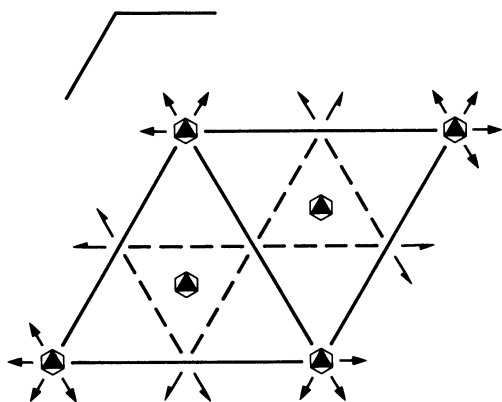
$\bar{6}2m$

Hexagonal

No. 189

$P\bar{6}2m$

Patterson symmetry $P6/mmm$



Origin at $\bar{6}2m$

Asymmetric unit $0 \leq x \leq \frac{2}{3}; 0 \leq y \leq \frac{1}{2}; 0 \leq z \leq \frac{1}{2}; x \leq (1+y)/2; y \leq \min(1-x, x)$

Vertices $0, 0, 0 \quad \frac{1}{2}, 0, 0 \quad \frac{2}{3}, \frac{1}{3}, 0 \quad \frac{1}{2}, \frac{1}{2}, 0$
 $0, 0, \frac{1}{2} \quad \frac{1}{2}, 0, \frac{1}{2} \quad \frac{2}{3}, \frac{1}{3}, \frac{1}{2} \quad \frac{1}{2}, \frac{1}{2}, \frac{1}{2}$

Symmetry operations

- | | | |
|------------------|----------------------------------|----------------------------------|
| (1) 1 | (2) $3^+ 0, 0, z$ | (3) $3^- 0, 0, z$ |
| (4) $m x, y, 0$ | (5) $\bar{6}^- 0, 0, z; 0, 0, 0$ | (6) $\bar{6}^+ 0, 0, z; 0, 0, 0$ |
| (7) $2 x, x, 0$ | (8) $2 x, 0, 0$ | (9) $2 0, y, 0$ |
| (10) $m x, x, z$ | (11) $m x, 0, z$ | (12) $m 0, y, z$ |

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (4); (7)

Positions

Multiplicity, Wyckoff letter, Site symmetry		Coordinates				Reflection conditions	
						General:	
12	<i>l</i> 1	(1) x, y, z (4) x, y, \bar{z} (7) y, x, \bar{z} (10) y, x, z	(2) $\bar{y}, x - y, z$ (5) $\bar{y}, x - y, \bar{z}$ (8) $x - y, \bar{y}, \bar{z}$ (11) $x - y, \bar{y}, z$	(3) $\bar{x} + y, \bar{x}, z$ (6) $\bar{x} + y, \bar{x}, \bar{z}$ (9) $\bar{x}, \bar{x} + y, \bar{z}$ (12) $\bar{x}, \bar{x} + y, z$		no conditions	
						Special: no extra conditions	
6	<i>k</i> $m..$	$x, y, \frac{1}{2}$	$\bar{y}, x - y, \frac{1}{2}$	$\bar{x} + y, \bar{x}, \frac{1}{2}$	$y, x, \frac{1}{2}$	$x - y, \bar{y}, \frac{1}{2}$	$\bar{x}, \bar{x} + y, \frac{1}{2}$
6	<i>j</i> $m..$	$x, y, 0$	$\bar{y}, x - y, 0$	$\bar{x} + y, \bar{x}, 0$	$y, x, 0$	$x - y, \bar{y}, 0$	$\bar{x}, \bar{x} + y, 0$
6	<i>i</i> $..m$	$x, 0, z$	$0, x, z$	\bar{x}, \bar{x}, z	$x, 0, \bar{z}$	$0, x, \bar{z}$	$\bar{x}, \bar{x}, \bar{z}$
4	<i>h</i> $3..$	$\frac{1}{3}, \frac{2}{3}, z$	$\frac{1}{3}, \frac{2}{3}, \bar{z}$	$\frac{2}{3}, \frac{1}{3}, \bar{z}$	$\frac{2}{3}, \frac{1}{3}, z$		
3	<i>g</i> $m2m$	$x, 0, \frac{1}{2}$	$0, x, \frac{1}{2}$	$\bar{x}, \bar{x}, \frac{1}{2}$			
3	<i>f</i> $m2m$	$x, 0, 0$	$0, x, 0$	$\bar{x}, \bar{x}, 0$			
2	<i>e</i> $3.m$	$0, 0, z$	$0, 0, \bar{z}$				
2	<i>d</i> $\bar{6}..$	$\frac{1}{3}, \frac{2}{3}, \frac{1}{2}$	$\frac{2}{3}, \frac{1}{3}, \frac{1}{2}$				
2	<i>c</i> $\bar{6}..$	$\frac{1}{3}, \frac{2}{3}, 0$	$\frac{2}{3}, \frac{1}{3}, 0$				
1	<i>b</i> $\bar{6}2m$	$0, 0, \frac{1}{2}$					
1	<i>a</i> $\bar{6}2m$	$0, 0, 0$					

Symmetry of special projections

Along [001] $p31m$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, 0, z$

Along [100] $p2mm$
 $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, 0, 0$

Along [210] $p11m$
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, \frac{1}{2}x, 0$

Maximal non-isomorphic subgroups

I	[2] $P\bar{6}11$ ($P\bar{6}$, 174)	1; 2; 3; 4; 5; 6
	[2] $P31m$ (157)	1; 2; 3; 10; 11; 12
	[2] $P321$ (150)	1; 2; 3; 7; 8; 9
	{ [3] $Pm2m$ ($Amm2$, 38)	1; 4; 7; 10
	{ [3] $Pm2m$ ($Amm2$, 38)	1; 4; 8; 11
	{ [3] $Pm2m$ ($Amm2$, 38)	1; 4; 9; 12

IIa none

IIb [2] $P\bar{6}2c$ ($\mathbf{c}' = 2\mathbf{c}$) (190); [3] $H\bar{6}2m$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) ($P\bar{6}m2$, 187)

Maximal isomorphic subgroups of lowest index

IIc [2] $P\bar{6}2m$ ($\mathbf{c}' = 2\mathbf{c}$) (189); [4] $P\bar{6}2m$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) (189)

Minimal non-isomorphic supergroups

I [2] $P6/mmm$ (191); [2] $P6_3/mcm$ (193)

II [3] $H\bar{6}2m$ ($P\bar{6}m2$, 187)