

$p\bar{3}m1$

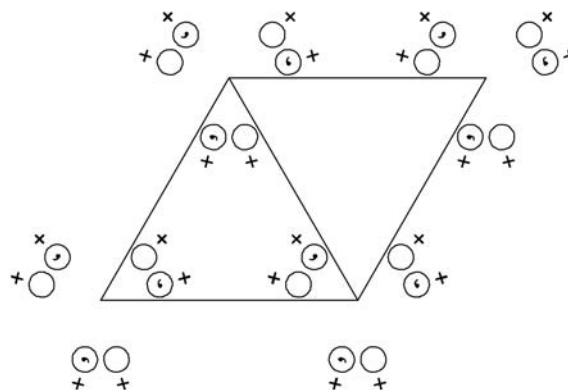
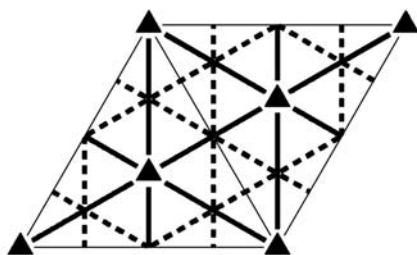
$3m1$

Trigonal/Hexagonal

No. 69

$p3m1$

Patterson symmetry $p\bar{3}m1$



Origin on $3m1$

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

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

Symmetry operations

- | | | |
|---|------------------------------------|---|
| (1) 1
(1 0,0,0) | (2) 3^+ 0,0,z
(3_z 0,0,0) | (3) 3^- 0,0,z
(3_z^{-1} 0,0,0) |
| (4) m x, \bar{x} ,z
(m_{xy} 0,0,0) | (5) m x,2x,z
(m_x 0,0,0) | (6) m 2x,x,z
(m_y 0,0,0) |

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

Positions

Multiplicity, Wyckoff letter, Site symmetry		Coordinates			Reflection conditions
6 <i>e</i> 1	(1) x, y, z (4) \bar{y}, \bar{x}, z	(2) $\bar{y}, x - y, z$ (5) $\bar{x} + y, y, z$	(3) $\bar{x} + y, \bar{x}, z$ (6) $x, x - y, z$		General: no conditions Special: no extra conditions
3 <i>d</i> . <i>m</i> .	x, \bar{x}, z	$x, 2x, z$	$2\bar{x}, \bar{x}, z$		
1 <i>c</i> 3 <i>m</i> .	$\frac{2}{3}, \frac{1}{3}, z$				
1 <i>b</i> 3 <i>m</i> .	$\frac{1}{3}, \frac{2}{3}, z$				
1 <i>a</i> 3 <i>m</i> .	$0, 0, z$				

Symmetry of special projections

Along $[001]$ $p3m1$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, 0, z$

Along $[100]$ $\neq 111$
 $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$
 Origin at $x, 0, 0$

Along $[210]$ $\neq 1m1$
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$
 Origin at $x, \frac{1}{2}x, 0$

Maximal non-isotypic subgroups

I [2] $p311$ ($p3, 65$) 1; 2; 3
 [3] $p1m1$ ($cm11, 13$) 1; 4
 [3] $p1m1$ ($cm11, 13$) 1; 5
 [3] $p1m1$ ($cm11, 13$) 1; 6

IIa none

IIb [3] $h3m1$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) ($p31m, 70$)

Maximal isotypic subgroups of lowest index

IIc [4] $p3m1$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) (69)

Minimal non-isotypic supergroups

I [2] $p\bar{3}m1$ (72); [2] $p6mm$ (77); [2] $p\bar{6}m2$ (78)

II [2] $h3m1$ ($p31m, 70$)