

$P3m1$

C_{3v}^1

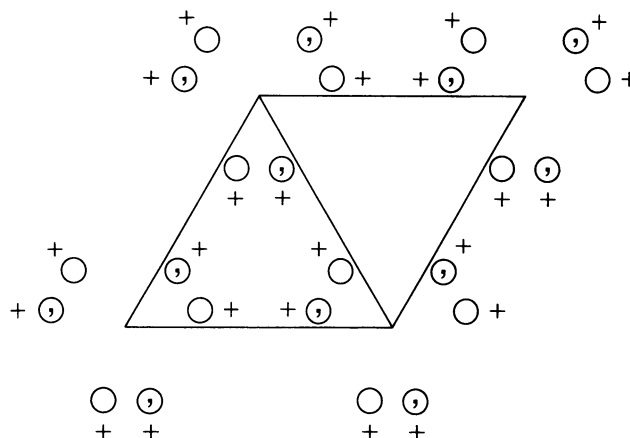
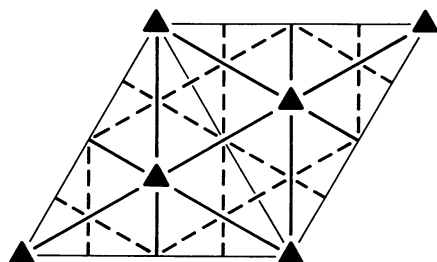
$3m1$

Trigonal

No. 156

$P3m1$

Patterson symmetry $P\bar{3}m1$



Origin on $3m1$

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

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

Symmetry operations

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

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

Positions

Multiplicity,
Wyckoff letter,
Site symmetry

Coordinates

Reflection conditions

6	e	1	(1) x, y, z	(2) $\bar{y}, x - y, z$	(3) $\bar{x} + y, \bar{x}, z$
			(4) \bar{y}, \bar{x}, z	(5) $\bar{x} + y, y, z$	(6) $x, x - y, z$

General:

no conditions

Special: no extra conditions

3	d	$.m.$	x, \bar{x}, z	$x, 2x, z$	$2\bar{x}, \bar{x}, z$
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1	c	$3m.$	$\frac{2}{3}, \frac{1}{3}, z$
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1	b	$3m.$	$\frac{1}{3}, \frac{2}{3}, z$
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1	a	$3m.$	$0, 0, z$
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Symmetry of special projectionsAlong $[001]$ $p3m1$ $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$ Origin at $0, 0, z$ Along $[100]$ $p1$ $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$ $\mathbf{b}' = \mathbf{c}$ Origin at $x, 0, 0$ Along $[210]$ $p1m1$ $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$ Origin at $x, \frac{1}{2}x, 0$ **Maximal non-isomorphic subgroups****I** [2] $P311$ ($P3, 143$) 1; 2; 3

{	[3] $P1m1$ ($Cm, 8$)	1; 4
	[3] $P1m1$ ($Cm, 8$)	1; 5
	[3] $P1m1$ ($Cm, 8$)	1; 6

IIa none**IIb** [2] $P3c1$ ($\mathbf{c}' = 2\mathbf{c}$) (158); [3] $H3m1$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) ($P31m, 157$)**Maximal isomorphic subgroups of lowest index****IIc** [2] $P3m1$ ($\mathbf{c}' = 2\mathbf{c}$) (156); [4] $P3m1$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) (156)**Minimal non-isomorphic supergroups****I** [2] $P\bar{3}m1$ (164); [2] $P6mm$ (183); [2] $P6_3mc$ (186); [2] $P\bar{6}m2$ (187)**II** [3] $H3m1$ ($P31m, 157$); [3] $R3m$ (obverse) (160); [3] $R3m$ (reverse) (160)