

$P3m1$

C_{3v}^1

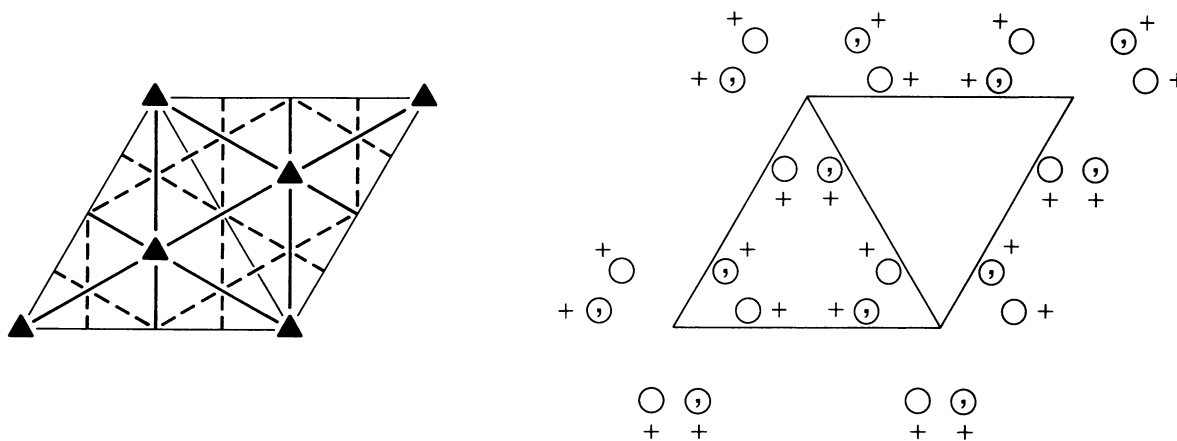
$3m1$

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 <i>e</i> 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 <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 $[100]$ $p1$ $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$ $\mathbf{b}' = \mathbf{c}$ Origin at $x, 0, 0$
 Along $[210]$ $p1m1$ $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$ Origin at $x, \frac{1}{2}x, 0$