

$p31m$

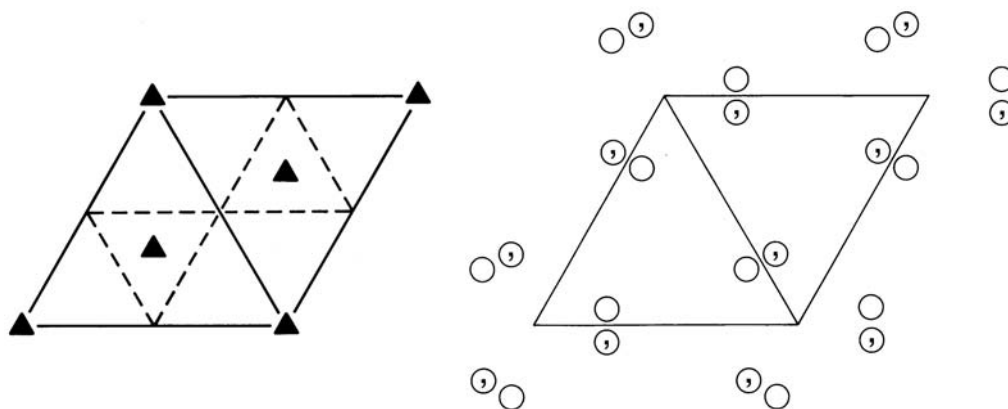
$3m$

Hexagonal

No. 15

$p31m$

Patterson symmetry $p6mm$



Origin at $31m$

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

Symmetry operations

- (1) 1
- (2) $3^+ 0, 0$
- (3) $3^- 0, 0$
- (4) $m \ x, x$
- (5) $m \ x, 0$
- (6) $m \ 0, y$

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

Positions

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

Maximal non-isomorphic subgroups

- I** [2] $p311 (p3, 13)$ 1; 2; 3
- { [3] $p11m (cm, 5)$ 1; 4
- [3] $p11m (cm, 5)$ 1; 5
- [3] $p11m (cm, 5)$ 1; 6

IIa none

IIb [3] $h31m (a' = 3a, b' = 3b) (p3m1, 14)$

Maximal isomorphic subgroups of lowest index

IIc [4] $p31m (a' = 2a, b' = 2b) (15)$

Minimal non-isomorphic supergroups

- I** [2] $p6mm (17)$
- II** [3] $h31m (p3m1, 14)$