

Trigonal

$31m$

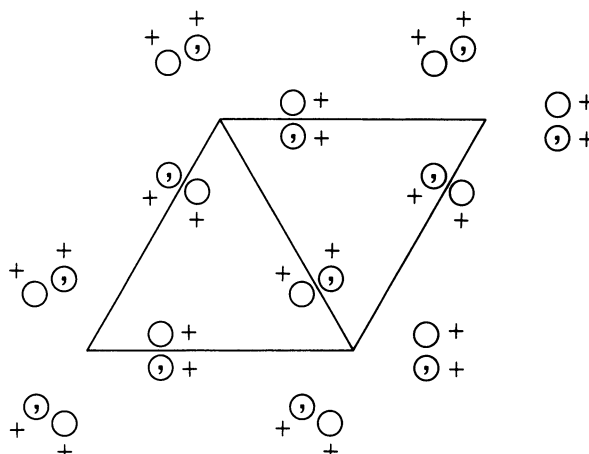
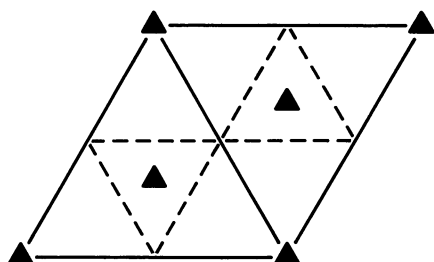
$C_{3v}^2$

$P31m$

Patterson symmetry  $P\bar{3}1m$

$P31m$

No. 157



**Origin** on  $31m$

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

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

**Symmetry operations**

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

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

General:  
no conditions

Special: no extra conditions

3 *c*  $\dots m$   $x,0,z$   $0,x,z$   $\bar{x},\bar{x},z$

2 *b*  $3 \dots$   $\frac{1}{3},\frac{2}{3},z$   $\frac{2}{3},\frac{1}{3},z$

1 *a*  $3 \dots m$   $0,0,z$

**Symmetry of special projections**

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

Along  $[100]$   $p1m1$   
 $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b}) \quad \mathbf{b}' = \mathbf{c}$   
 Origin at  $x,0,0$

Along  $[210]$   $p1$   
 $\mathbf{a}' = \frac{1}{2}\mathbf{b} \quad \mathbf{b}' = \mathbf{c}$   
 Origin at  $x, \frac{1}{2}x, 0$