

Hexagonal

$6/m$

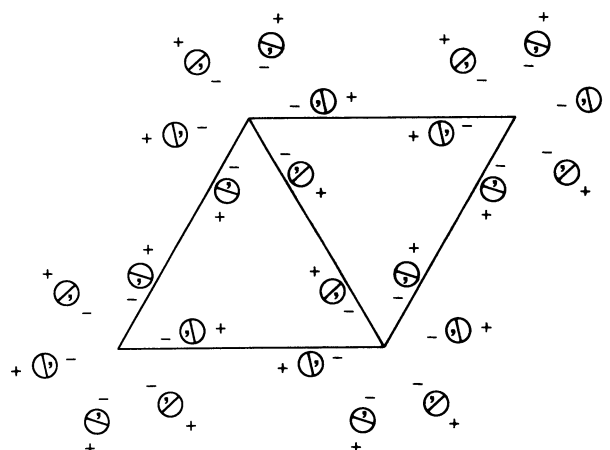
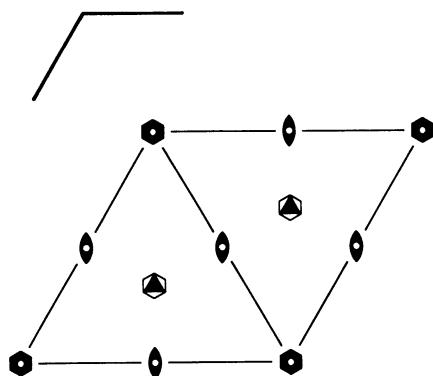
$C_{6h}^1$

$P6/m$

Patterson symmetry  $P6/m$

$P6/m$

No. 175



Origin at centre ( $6/m$ )

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

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

Symmetry operations

- (1) 1
- (2)  $3^+$   $0, 0, z$
- (3)  $3^-$   $0, 0, z$
- (4) 2  $0, 0, z$
- (5)  $6^-$   $0, 0, z$
- (6)  $6^+$   $0, 0, z$
- (7)  $\bar{1}$   $0, 0, 0$
- (8)  $\bar{3}^+$   $0, 0, z$ ;  $0, 0, 0$
- (9)  $\bar{3}^-$   $0, 0, z$ ;  $0, 0, 0$
- (10)  $m$   $x, y, 0$
- (11)  $\bar{6}^-$   $0, 0, z$ ;  $0, 0, 0$
- (12)  $\bar{6}^+$   $0, 0, z$ ;  $0, 0, 0$

Generators selected (1);  $t(1, 0, 0)$ ;  $t(0, 1, 0)$ ;  $t(0, 0, 1)$ ; (2); (4); (7)

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates	Reflection conditions
12 <i>l</i> 1	(1) $x, y, z$ (2) $\bar{y}, x - y, z$ (3) $\bar{x} + y, \bar{x}, z$ (4) $\bar{x}, \bar{y}, z$ (5) $y, \bar{x} + y, z$ (6) $x - y, x, z$ (7) $\bar{x}, \bar{y}, \bar{z}$ (8) $y, \bar{x} + y, \bar{z}$ (9) $x - y, x, \bar{z}$ (10) $x, y, \bar{z}$ (11) $\bar{y}, x - y, \bar{z}$ (12) $\bar{x} + y, \bar{x}, \bar{z}$	General: no conditions

Special: no extra conditions

6 <i>k</i> $m..$	$x, y, \frac{1}{2}$	$\bar{y}, x - y, \frac{1}{2}$	$\bar{x} + y, \bar{x}, \frac{1}{2}$	$\bar{x}, \bar{y}, \frac{1}{2}$	$y, \bar{x} + y, \frac{1}{2}$	$x - y, x, \frac{1}{2}$
6 <i>j</i> $m..$	$x, y, 0$	$\bar{y}, x - y, 0$	$\bar{x} + y, \bar{x}, 0$	$\bar{x}, \bar{y}, 0$	$y, \bar{x} + y, 0$	$x - y, x, 0$
6 <i>i</i> $2..$	$\frac{1}{2}, 0, z$	$0, \frac{1}{2}, z$	$\frac{1}{2}, \frac{1}{2}, z$	$\frac{1}{2}, 0, \bar{z}$	$0, \frac{1}{2}, \bar{z}$	$\frac{1}{2}, \frac{1}{2}, \bar{z}$
4 <i>h</i> $3..$	$\frac{1}{3}, \frac{2}{3}, z$	$\frac{2}{3}, \frac{1}{3}, z$	$\frac{2}{3}, \frac{1}{3}, \bar{z}$	$\frac{1}{3}, \frac{2}{3}, \bar{z}$		
3 <i>g</i> $2/m..$	$\frac{1}{2}, 0, \frac{1}{2}$	$0, \frac{1}{2}, \frac{1}{2}$	$\frac{1}{2}, \frac{1}{2}, \frac{1}{2}$			
3 <i>f</i> $2/m..$	$\frac{1}{2}, 0, 0$	$0, \frac{1}{2}, 0$	$\frac{1}{2}, \frac{1}{2}, 0$			
2 <i>e</i> $6..$	$0, 0, z$	$0, 0, \bar{z}$				
2 <i>d</i> $\bar{6}..$	$\frac{1}{3}, \frac{2}{3}, \frac{1}{2}$	$\frac{2}{3}, \frac{1}{3}, \frac{1}{2}$				
2 <i>c</i> $\bar{6}..$	$\frac{1}{3}, \frac{2}{3}, 0$	$\frac{2}{3}, \frac{1}{3}, 0$				
1 <i>b</i> $6/m..$	$0, 0, \frac{1}{2}$					
1 <i>a</i> $6/m..$	$0, 0, 0$					

Symmetry of special projections

Along  $[001]$   $p6$   
 $\mathbf{a}' = \mathbf{a}$   $\mathbf{b}' = \mathbf{b}$   
 Origin at  $0, 0, z$

Along  $[100]$   $p2mm$   
 $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$   $\mathbf{b}' = \mathbf{c}$   
 Origin at  $x, 0, 0$

Along  $[210]$   $p2mm$   
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$   $\mathbf{b}' = \mathbf{c}$   
 Origin at  $x, \frac{1}{2}x, 0$