

$P6mm$

$C_{6v}^1$

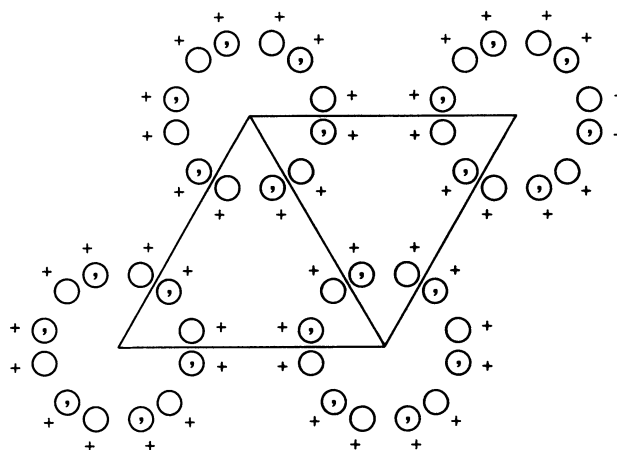
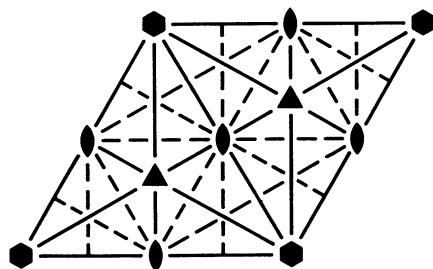
$6mm$

Hexagonal

No. 183

$P6mm$

Patterson symmetry  $P6/mmm$



Origin on  $6mm$

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

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

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)  $m$   $x,\bar{x},z$
- (8)  $m$   $x,2x,z$
- (9)  $m$   $2x,x,z$
- (10)  $m$   $x,x,z$
- (11)  $m$   $x,0,z$
- (12)  $m$   $0,y,z$

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	$f$	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) $\bar{y},\bar{x},z$	(8) $\bar{x}+y,y,z$	(9) $x,x-y,z$
			(10) $y,x,z$	(11) $x-y,\bar{y},z$	(12) $\bar{x},\bar{x}+y,z$

General:

no conditions

Special: no extra conditions

6	$e$	$.m.$	$x,\bar{x},z$	$x,2x,z$	$2\bar{x},\bar{x},z$	$\bar{x},x,z$	$\bar{x},2\bar{x},z$	$2x,x,z$
6	$d$	$.m$	$x,0,z$	$0,x,z$	$\bar{x},\bar{x},z$	$\bar{x},0,z$	$0,\bar{x},z$	$x,x,z$
3	$c$	$2mm$	$\frac{1}{2},0,z$	$0,\frac{1}{2},z$	$\frac{1}{2},\frac{1}{2},z$			
2	$b$	$3m.$	$\frac{1}{3},\frac{2}{3},z$	$\frac{2}{3},\frac{1}{3},z$				
1	$a$	$6mm$	$0,0,z$					

Symmetry of special projections

Along  $[001]$   $p6mm$   
 $\mathbf{a}' = \mathbf{a}$   $\mathbf{b}' = \mathbf{b}$   
 Origin at  $0,0,z$

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

Along  $[210]$   $p1m1$   
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$   $\mathbf{b}' = \mathbf{c}$   
 Origin at  $x,\frac{1}{2}x,0$