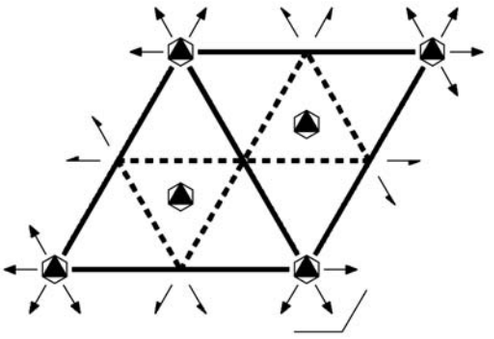
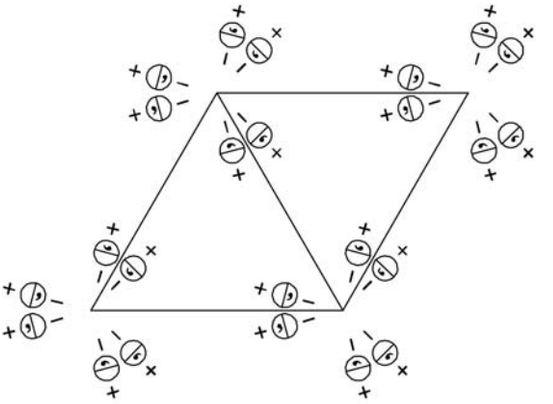
$p\bar{6}2m$ $\bar{6}2m$ Hexagonal/Hexagonal

No. 79 $p\bar{6}2m$ Patterson symmetry $p6/mmm$





Origin at $\bar{6}2m$

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

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

Symmetry operations

(1) 1
$(1|0,0,0)$

(2) 3^+ $0,0,z$
$(3_z|0,0,0)$

(3) 3^- $0,0,z$
$(3_z^{-1}|0,0,0)$

(4) m $x,y,0$
$(m_z|0,0,0)$

(5) $\bar{6}^-$ $0,0,z$; $0,0,0$
$(\bar{6}_z^{-1}|0,0,0)$

(6) $\bar{6}^+$ $0,0,z$; $0,0,0$
$(\bar{6}_z|0,0,0)$

(7) 2 $x,x,0$
$(2_{xy}|0,0,0)$

(8) 2 $x,0,0$
$(2_x|0,0,0)$

(9) 2 $0,y,0$
$(2_y|0,0,0)$

(10) m x,x,z
$(m_3|0,0,0)$

(11) m $x,0,z$
$(m_2|0,0,0)$

(12) m $0,y,z$
$(m_1|0,0,0)$

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

Positions

Multiplicity, Wyckoff letter, Site symmetry			Coordinates			Reflection conditions
						General:
12	h	1	(1) x,y,z	(2) $\bar{y},x-y,z$	(3) $\bar{x}+y,\bar{x},z$	no conditions
			(4) $x,y,\bar{z}$	(5) $\bar{y},x-y,\bar{z}$	(6) $\bar{x}+y,\bar{x},\bar{z}$	
			(7) $y,x,\bar{z}$	(8) $x-y,\bar{y},\bar{z}$	(9) $\bar{x},\bar{x}+y,\bar{z}$	
			(10) y,x,z	(11) $x-y,\bar{y},z$	(12) $\bar{x},\bar{x}+y,z$	
						Special: no extra conditions
6	g	m . .	$x,y,0$	$\bar{y},x-y,0$	$\bar{x}+y,\bar{x},0$	$y,x,0$ $x-y,\bar{y},0$ $\bar{x},\bar{x}+y,0$
6	f	. . m	$x,0,z$	$0,x,z$	$\bar{x},\bar{x},z$	$x,0,\bar{z}$ $0,x,\bar{z}$ $\bar{x},\bar{x},\bar{z}$
4	e	3 . .	$\frac{1}{3},\frac{2}{3},z$	$\frac{1}{3},\frac{2}{3},\bar{z}$	$\frac{2}{3},\frac{1}{3},\bar{z}$	$\frac{2}{3},\frac{1}{3},z$
3	d	$m\,2\,m$	$x,0,0$	$0,x,0$	$\bar{x},\bar{x},0$	
2	c	3 . m	$0,0,z$	$0,0,\bar{z}$		
2	b	$\bar{6}$ . .	$\frac{1}{3},\frac{2}{3},0$	$\frac{2}{3},\frac{1}{3},0$		
1	a	$\bar{6}\,2\,m$	$0,0,0$			

Symmetry of special projections

Along [001] $p3\,1\,m$
$\mathbf{a}'=\mathbf{a}$ $\mathbf{b}'=\mathbf{b}$
Origin at $0,0,z$

Along [100] $\not{p}2\,m\,m$
$\mathbf{a}'=\frac{1}{2}(\mathbf{a}+2\mathbf{b})$
Origin at $x,0,0$

Along [210] $\not{p}1\,1\,m$
$\mathbf{a}'=\frac{1}{2}\mathbf{b}$
Origin at $x,\frac{1}{2}x,0$

Maximal non-isotypic subgroups

I [2] $p\bar{6}\,1\,1$ ($p\bar{6}$, 74) 1; 2; 3; 4; 5; 6
[2] $p3\,1\,m$ (70) 1; 2; 3; 10; 11; 12
[2] $p3\,2\,1$ (68) 1; 2; 3; 7; 8; 9
[3] $pm2m$ ($cm2m$, 35) 1; 4; 7; 10
[3] $pm2m$ ($cm2m$, 35) 1; 4; 8; 11
[3] $pm2m$ ($cm2m$, 35) 1; 4; 9; 12

IIa none

IIb [3] $h\bar{6}\,2\,m$ ($\mathbf{a}'=3\mathbf{a},\mathbf{b}'=3\mathbf{b}$) ($p\bar{6}m2$, 78)

Maximal isotypic subgroups of lowest index

IIc [4] $p\bar{6}\,2\,m$ ($\mathbf{a}'=2\mathbf{a},\mathbf{b}'=2\mathbf{b}$) (79)

Minimal non-isotypic supergroups

I [2] $p6/mmm$ (80)

II [2] $h\bar{6}\,2\,m$ ($p\bar{6}m2$, 78)