

*p*622

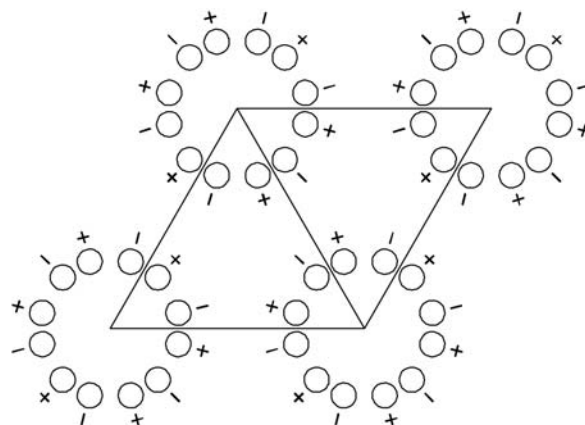
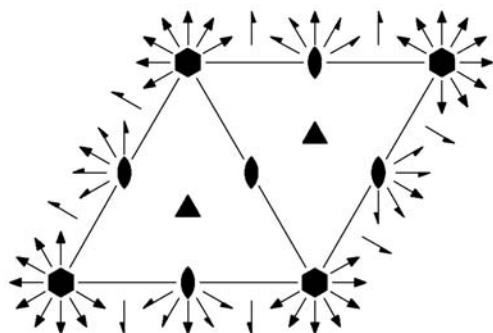
622

Hexagonal/Hexagonal

No. 76

*p*622

Patterson symmetry *p*6/*m**m**m*



Origin at 622

Asymmetric unit $0 \leq x \leq \frac{2}{3}; \quad 0 \leq y \leq \frac{1}{2}; \quad x \leq (1+y)/2; \quad y \leq \min(1-x, x); \quad 0 \leq z$
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) $3^+ 0, 0, z$ | (3) $3^- 0, 0, z$ |
| (4) 2 $0, 0, z$ | (5) $6^- 0, 0, z$ | (6) $6^+ 0, 0, z$ |
| (7) 2 $x, x, 0$ | (8) 2 $x, 0, 0$ | (9) 2 $0, y, 0$ |
| (10) 2 $x, \bar{x}, 0$ | (11) 2 $x, 2x, 0$ | (12) 2 $2x, x, 0$ |

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	<i>i</i>	1	(1) x, y, z	(2) $\bar{y}, x - y, z$	(3) $\bar{x} + y, \bar{x}, z$				no conditions
			(4) \bar{x}, \bar{y}, z	(5) $y, \bar{x} + y, z$	(6) $x - y, x, z$				
			(7) y, x, \bar{z}	(8) $x - y, \bar{y}, \bar{z}$	(9) $\bar{x}, \bar{x} + y, \bar{z}$				
			(10) $\bar{y}, \bar{x}, \bar{z}$	(11) $\bar{x} + y, y, \bar{z}$	(12) $x, x - y, \bar{z}$				
Special: no extra conditions									
6	<i>h</i>	. . 2	$x, \bar{x}, 0$	$x, 2x, 0$	$2\bar{x}, \bar{x}, 0$	$\bar{x}, x, 0$	$\bar{x}, 2\bar{x}, 0$	$2x, x, 0$	
6	<i>g</i>	. 2 .	$x, 0, 0$	$0, x, 0$	$\bar{x}, \bar{x}, 0$	$\bar{x}, 0, 0$	$0, \bar{x}, 0$	$x, x, 0$	
6	<i>f</i>	2 . .	$\frac{1}{2}, 0, z$	$0, \frac{1}{2}, z$	$\frac{1}{2}, \frac{1}{2}, z$	$0, \frac{1}{2}, \bar{z}$	$\frac{1}{2}, 0, \bar{z}$	$\frac{1}{2}, \frac{1}{2}, \bar{z}$	
4	<i>e</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>d</i>	2 2 2	$\frac{1}{2}, 0, 0$	$0, \frac{1}{2}, 0$	$\frac{1}{2}, \frac{1}{2}, 0$				
2	<i>c</i>	6 . .	$0, 0, z$	$0, 0, \bar{z}$					
2	<i>b</i>	3 . 2	$\frac{1}{3}, \frac{2}{3}, 0$	$\frac{2}{3}, \frac{1}{3}, 0$					
1	<i>a</i>	6 2 2	$0, 0, 0$						

Symmetry of special projections

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

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

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

Maximal non-isotypic subgroups

I	[2] $p611$ ($p6, 73$)	1; 2; 3; 4; 5; 6
	[2] $p321$ (68)	1; 2; 3; 7; 8; 9
	[2] $p312$ (67)	1; 2; 3; 10; 11; 12
	[3] $p222$ ($c222, 22$)	1; 4; 7; 10
	[3] $p222$ ($c222, 22$)	1; 4; 8; 11
	[3] $p222$ ($c222, 22$)	1; 4; 9; 12

IIa none

IIb none

Maximal isotypic subgroups of lowest index

IIc [3] $h622$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) ($p622, 76$)

Minimal non-isotypic supergroups

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

II none