

$\mu 622$

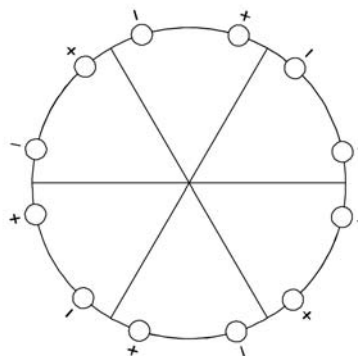
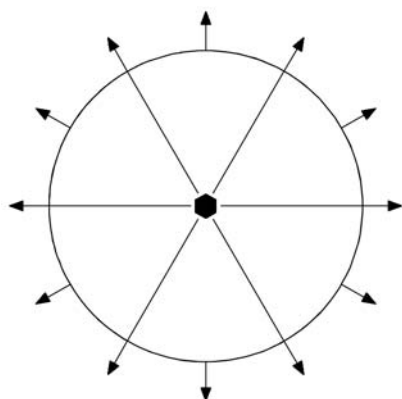
622

Hexagonal

No. 62

$\mu 622$

Patterson symmetry  $\mu 6/mmm$



Origin at 622

Asymmetric unit  $0 \leq x; 0 \leq y; 0 \leq z \leq \frac{1}{2}; y \leq x$

Symmetry operations

- |   |   |   |
|---|---|---|
| (1) 1<br>(1 0,0,0)                        | (2) $3^+$ 0,0,z<br>( $3_z$  0,0,0)      | (3) $3^-$ 0,0,z<br>( $3_z^{-1}$  0,0,0) |
| (4) 2 0,0,z<br>( $2_z$  0,0,0)            | (5) $6^-$ 0,0,z<br>( $6_z^{-1}$  0,0,0) | (6) $6^+$ 0,0,z<br>( $6_z$  0,0,0)      |
| (7) 2 x,x,0<br>( $2_{xy}$  0,0,0)         | (8) 2 x,0,0<br>( $2_x$  0,0,0)          | (9) 2 0,y,0<br>( $2_y$  0,0,0)          |
| (10) 2 x, $\bar{x}$ ,0<br>( $2_3$  0,0,0) | (11) 2 x,2x,0<br>( $2_2$  0,0,0)        | (12) 2 2x,x,0<br>( $2_1$  0,0,0)        |

**Generators selected** (1);  $t(0,0,1)$ ; (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) $\bar{x}, \bar{y}, z$	(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	$g$ . . 2	$x, \bar{x}, \frac{1}{2}$	$x, 2x, \frac{1}{2}$	$2\bar{x}, \bar{x}, \frac{1}{2}$	$\bar{x}, x, \frac{1}{2}$	$\bar{x}, 2\bar{x}, \frac{1}{2}$	$2x, x, \frac{1}{2}$	
6	$f$ . . 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	$e$ . 2 .	$x, 0, \frac{1}{2}$	$0, x, \frac{1}{2}$	$\bar{x}, \bar{x}, \frac{1}{2}$	$\bar{x}, 0, \frac{1}{2}$	$0, \bar{x}, \frac{1}{2}$	$x, x, \frac{1}{2}$	
6	$d$ . 2 .	$x, 0, 0$	$0, x, 0$	$\bar{x}, \bar{x}, 0$	$\bar{x}, 0, 0$	$0, \bar{x}, 0$	$x, x, 0$	
2	$c$ 6 . .	$0, 0, z$	$0, 0, \bar{z}$					
1	$b$ 6 2 2	$0, 0, \frac{1}{2}$						
1	$a$ 6 2 2	$0, 0, 0$						

**Symmetry of special projections**

Along [001]  $6mm$

Along [100]  $\neq 2mm$

Along [210]  $\neq 2mm$

Origin at  $0, 0, z$

$\mathbf{a}' = \mathbf{c}$

$\mathbf{a}' = \mathbf{c}$

Origin at  $x, 0, 0$

Origin at  $x, \frac{1}{2}x, 0$

**Maximal non-isotypic non-enantiomorphic subgroups**

<b>I</b>	$[2] \neq 611 (\neq 6, 53)$	1; 2; 3; 4; 5; 6
	$[2] \neq 321 (\neq 312, 46)$	1; 2; 3; 7; 8; 9
	$[2] \neq 312 (46)$	1; 2; 3; 10; 11; 12
	$[3] \neq 222 (\neq 222, 13)$	1; 4; 7; 10
	$[3] \neq 222 (\neq 222, 13)$	1; 4; 8; 11
	$[3] \neq 222 (\neq 222, 13)$	1; 4; 9; 12

**IIa** none

**IIb**  $[2] \neq 6_3 22 (\mathbf{c}' = 2\mathbf{c}) (65)$ ;  $[3] \neq 6_4 22 (\mathbf{c}' = 3\mathbf{c}) (66)$ ;  $[3] \neq 6_2 22 (\mathbf{c}' = 3\mathbf{c}) (64)$

**Maximal isotypic subgroups and enantiomorphic subgroups of lowest index**

**IIc**  $[2] \neq 622 (\mathbf{c}' = 2\mathbf{c}) (62)$

**Minimal non-isotypic non-enantiomorphic supergroups**

**I**  $[2] \neq 6/mmm (73)$ ;  $[2] \neq 6/mcc (74)$

**II** none