

$\mu 6_4 2 2$

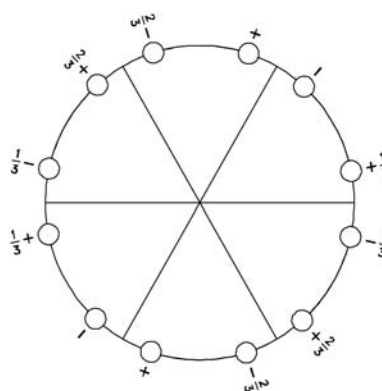
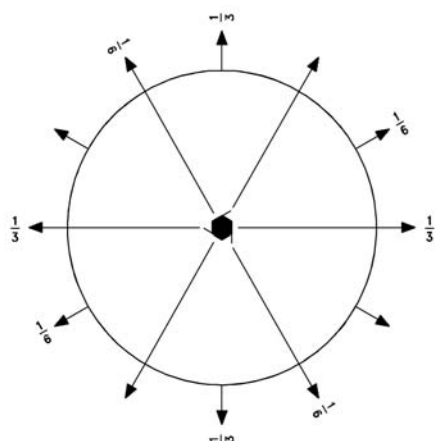
622

Hexagonal

No. 66

$\mu 6_4 2 2$

Patterson symmetry  $\mu 6/mmm$



**Origin** on 222 at  $6_4(2, 1, 1)(1, 2, 1)$

**Asymmetric unit**  $0 \leq x; 0 \leq z \leq \frac{1}{6}$

**Symmetry operations**

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

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

**Positions**

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

**Symmetry of special projections**

Along [001]  $6mm$

Along [100]  $\rho 2mm$

Along [210]  $\rho 2mm$

Origin at  $0, 0, z$

$\mathbf{a}' = \mathbf{c}$   
Origin at  $x, 0, 0$

$\mathbf{a}' = \mathbf{c}$   
Origin at  $x, \frac{1}{2}x, \frac{1}{3}$

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

<b>I</b>	$[2] \rho 6_4 11 (\rho 6_4, 57)$	1; 2; 3; 4; 5; 6
	$[2] \rho 3_1 21 (\rho 3_1 12, 47)$	1; 2; 3; 7; 8; 9
	$[2] \rho 3_1 12 (47)$	1; 2; 3; 10; 11; 12
	$[3] \rho 222 (\rho 222, 13)$	1; 4; 7; 10
	$[3] \rho 222 (\rho 222, 13)$	1; 4; 8; 11
	$[3] \rho 222 (\rho 222, 13)$	1; 4; 9; 12

**IIa** none

**IIb**  $[2] \rho 6_3 22 (\mathbf{c}' = 2\mathbf{c}) (67)$

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

**IIc**  $[2] \rho 6_2 22 (\mathbf{c}' = 2\mathbf{c}) (64)$ ;  $[7] \rho 6_4 22 (\mathbf{c}' = 7\mathbf{c}) (66)$

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

**I** none

**II**  $[3] \rho 622 (\mathbf{c}' = \frac{1}{3}\mathbf{c}) (62)$