

$\mu 6_3 2 2$

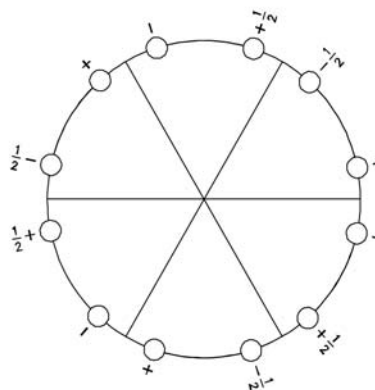
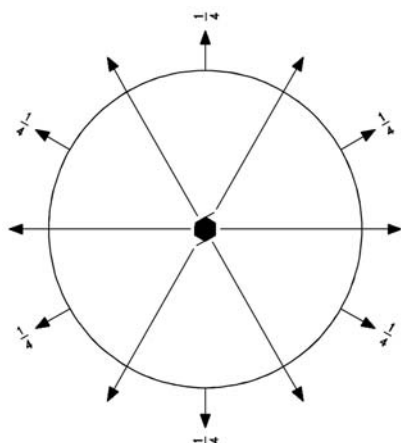
622

Hexagonal

No. 65

$\mu 6_3 2 2$

Patterson symmetry  $\mu 6/mmm$



Origin at  $321$  at  $6_3 21$

Asymmetric unit  $0 \leq x; 0 \leq y; 0 \leq z \leq \frac{1}{4}$

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) $2(\frac{1}{2})$ 0,0,z<br>( $2_z$  0,0, $\frac{1}{2}$ )          | (5) $6^-(\frac{1}{2})$ 0,0,z<br>( $6_z^{-1}$  0,0, $\frac{1}{2}$ ) | (6) $6^+(\frac{1}{2})$ 0,0,z<br>( $6_z$  0,0, $\frac{1}{2}$ ) |
| (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, $\bar{x}$ , $\frac{1}{4}$<br>( $2_3$  0,0, $\frac{1}{2}$ ) | (11) 2 x,2x, $\frac{1}{4}$<br>( $2_2$  0,0, $\frac{1}{2}$ )        | (12) 2 2x,x, $\frac{1}{4}$<br>( $2_1$  0,0, $\frac{1}{2}$ )   |

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

**Positions**

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

**Symmetry of special projections**

Along [001]  $6mm$

Along [100]  $\bar{6}2mg$

Along [210]  $\bar{6}2mg$

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

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Origin at  $0, 0, z$

Origin at  $x, 0, 0$

Origin at  $x, \frac{1}{2}x, \frac{1}{4}$

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

<b>I</b>	$[2]\bar{6}_3 11 (\bar{6}_3, 56)$	1; 2; 3; 4; 5; 6
	$[2]\bar{6}_3 21 (\bar{6}_3 12, 46)$	1; 2; 3; 7; 8; 9
	$[2]\bar{6}_3 12 (46)$	1; 2; 3; 10; 11; 12
	$[3]\bar{6}_2 22 (\bar{6}_2 22_1, 14)$	1; 4; 7; 10
	$[3]\bar{6}_2 22 (\bar{6}_2 22_2, 14)$	1; 4; 8; 11
	$[3]\bar{6}_2 22 (\bar{6}_2 22_3, 14)$	1; 4; 9; 12

**IIa** none

**IIb**  $[3]\bar{6}_3 22 (\mathbf{c}' = 3\mathbf{c}) (67)$ ;  $[3]\bar{6}_3 22 (\mathbf{c}' = 3\mathbf{c}) (63)$

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

**IIc**  $[3]\bar{6}_3 22 (\mathbf{c}' = 3\mathbf{c}) (65)$

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

**I**  $[2]\bar{6}_3 / m m c (75)$

**II**  $[2]\bar{6}_3 22 (\mathbf{c}' = \frac{1}{2}\mathbf{c}) (62)$