

$P222$

D_2^1

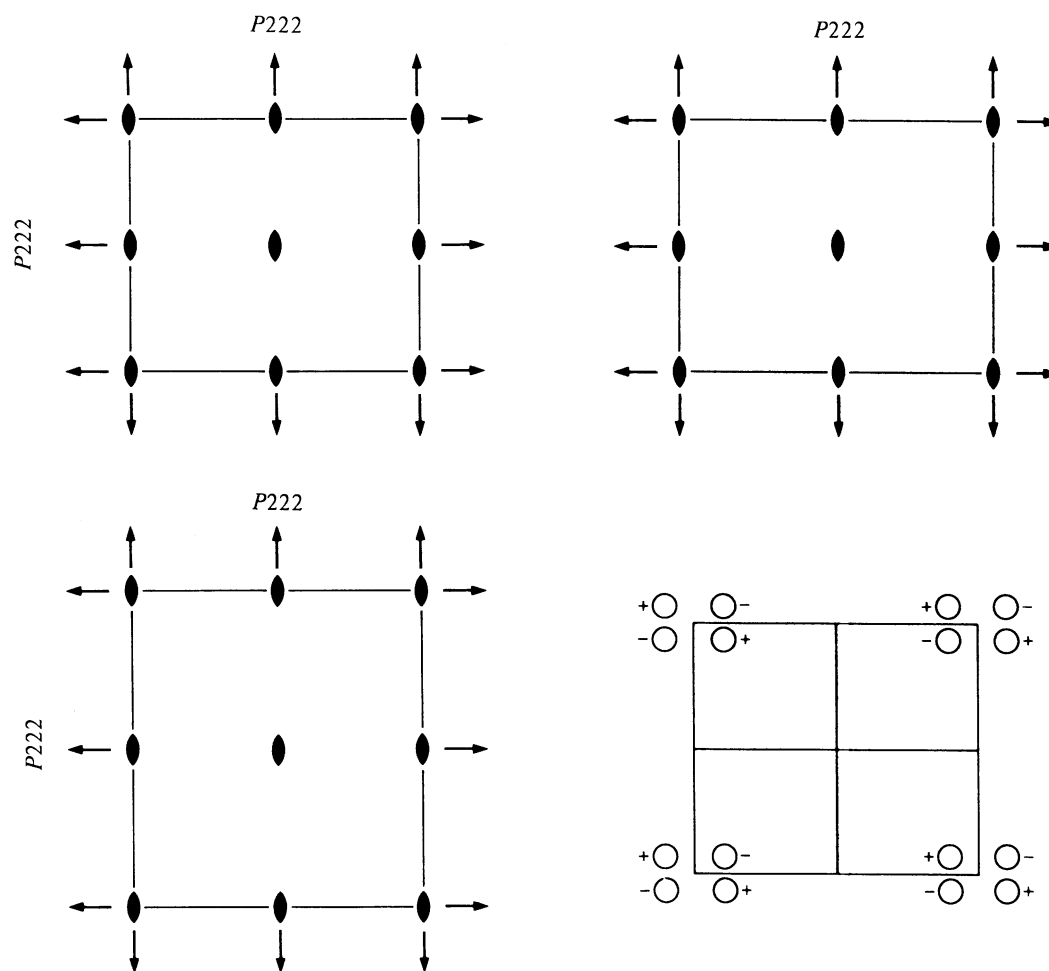
222

Orthorhombic

No. 16

$P222$

Patterson symmetry $Pmmm$



Origin at 222

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

Symmetry operations

- (1) 1 (2) 2 $0,0,z$ (3) 2 $0,y,0$ (4) 2 $x,0,0$

Maximal non-isomorphic subgroups

- I** [2] $P112 (P2, 3)$ 1; 2
 [2] $P121 (P2, 3)$ 1; 3
 [2] $P211 (P2, 3)$ 1; 4

IIa none

- IIb** [2] $P2_122 (a' = 2a) (P222_1, 17)$; [2] $P2_22_1 (b' = 2b) (P222_1, 17)$; [2] $P22_21 (c' = 2c) (17)$;
 [2] $A222 (b' = 2b, c' = 2c) (C222, 21)$; [2] $B222 (a' = 2a, c' = 2c) (C222, 21)$; [2] $C222 (a' = 2a, b' = 2b) (21)$;
 [2] $F222 (a' = 2a, b' = 2b, c' = 2c) (22)$

Maximal isomorphic subgroups of lowest index

- IIc** [2] $P222 (a' = 2a \text{ or } b' = 2b \text{ or } c' = 2c) (16)$

Minimal non-isomorphic supergroups

- I** [2] $Pmmm (47)$; [2] $Pnnn (48)$; [2] $Pccm (49)$; [2] $Pban (50)$; [2] $P422 (89)$; [2] $P4_22 (93)$; [2] $P\bar{4}2c (112)$; [2] $P\bar{4}2m (111)$;
 [3] $P23 (195)$
- II** [2] $A222 (C222, 21)$; [2] $B222 (C222, 21)$; [2] $C222 (21)$; [2] $I222 (23)$

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (3)

Positions

Multiplicity, Wyckoff letter, Site symmetry		Coordinates				Reflection conditions
		(1) x, y, z	(2) \bar{x}, \bar{y}, z	(3) \bar{x}, y, \bar{z}	(4) x, \bar{y}, \bar{z}	General: no conditions Special: no extra conditions
4	<i>u</i> 1					
2	<i>t</i> ..2	$\frac{1}{2}, \frac{1}{2}, z$	$\frac{1}{2}, \frac{1}{2}, \bar{z}$			
2	<i>s</i> ..2	$0, \frac{1}{2}, z$	$0, \frac{1}{2}, \bar{z}$			
2	<i>r</i> ..2	$\frac{1}{2}, 0, z$	$\frac{1}{2}, 0, \bar{z}$			
2	<i>q</i> ..2	$0, 0, z$	$0, 0, \bar{z}$			
2	<i>p</i> .2.	$\frac{1}{2}, y, \frac{1}{2}$	$\frac{1}{2}, \bar{y}, \frac{1}{2}$			
2	<i>o</i> .2.	$\frac{1}{2}, y, 0$	$\frac{1}{2}, \bar{y}, 0$			
2	<i>n</i> .2.	$0, y, \frac{1}{2}$	$0, \bar{y}, \frac{1}{2}$			
2	<i>m</i> .2.	$0, y, 0$	$0, \bar{y}, 0$			
2	<i>l</i> 2..	$x, \frac{1}{2}, \frac{1}{2}$	$\bar{x}, \frac{1}{2}, \frac{1}{2}$			
2	<i>k</i> 2..	$x, \frac{1}{2}, 0$	$\bar{x}, \frac{1}{2}, 0$			
2	<i>j</i> 2..	$x, 0, \frac{1}{2}$	$\bar{x}, 0, \frac{1}{2}$			
2	<i>i</i> 2..	$x, 0, 0$	$\bar{x}, 0, 0$			
1	<i>h</i> 222	$\frac{1}{2}, \frac{1}{2}, \frac{1}{2}$				
1	<i>g</i> 222	$0, \frac{1}{2}, \frac{1}{2}$				
1	<i>f</i> 222	$\frac{1}{2}, 0, \frac{1}{2}$				
1	<i>e</i> 222	$\frac{1}{2}, \frac{1}{2}, 0$				
1	<i>d</i> 222	$0, 0, \frac{1}{2}$				
1	<i>c</i> 222	$0, \frac{1}{2}, 0$				
1	<i>b</i> 222	$\frac{1}{2}, 0, 0$				
1	<i>a</i> 222	$0, 0, 0$				

Symmetry of special projections

Along [001] $p2mm$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, 0, z$

Along [100] $p2mm$
 $\mathbf{a}' = \mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, 0, 0$

Along [010] $p2mm$
 $\mathbf{a}' = \mathbf{c}$ $\mathbf{b}' = \mathbf{a}$
 Origin at $0, y, 0$

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