

$P2_12_12_1$

D_2^4

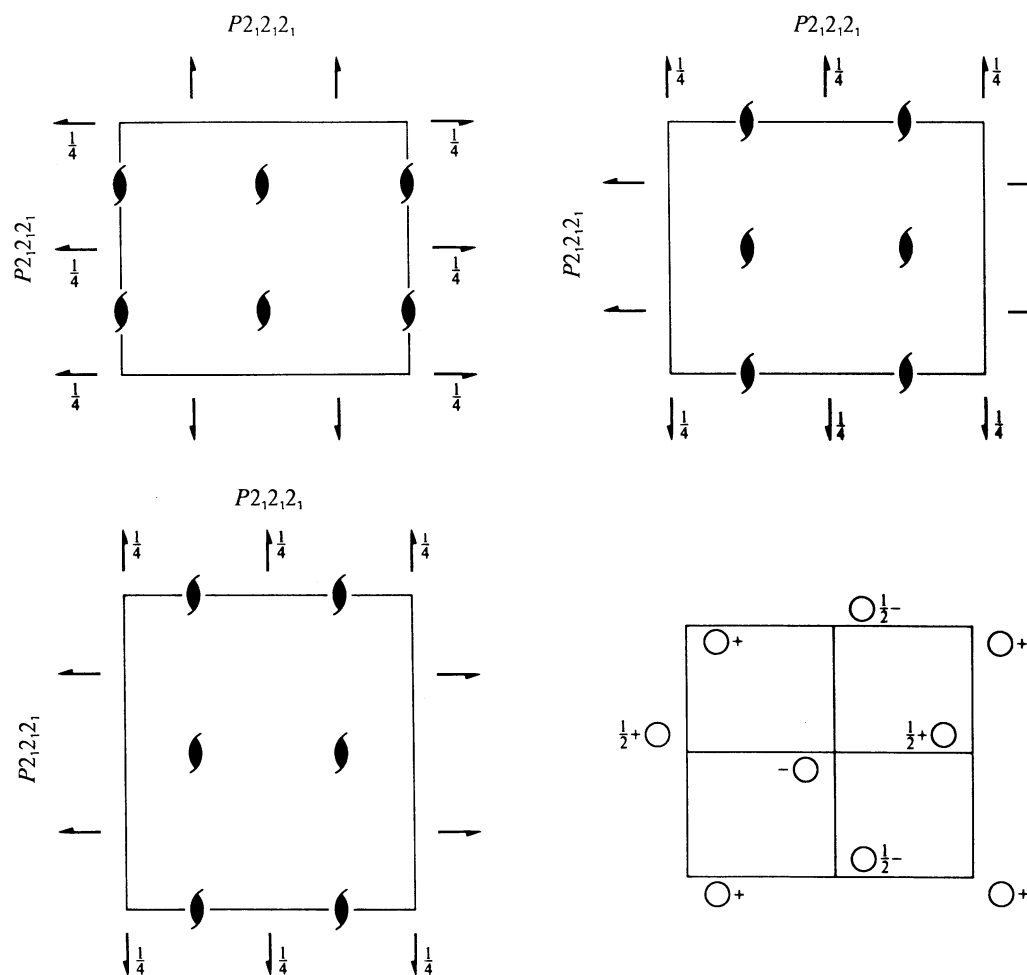
222

Orthorhombic

No. 19

$P2_12_12_1$

Patterson symmetry $Pmmm$



Origin at midpoint of three non-intersecting pairs of parallel 2_1 axes

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) $2(0, 0, \frac{1}{2}) \frac{1}{4}, 0, z$ (3) $2(0, \frac{1}{2}, 0) 0, y, \frac{1}{4}$ (4) $2(\frac{1}{2}, 0, 0) x, \frac{1}{4}, 0$

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
					General:
4 <i>a</i> 1	(1) x, y, z	(2) $\bar{x} + \frac{1}{2}, \bar{y}, z + \frac{1}{2}$	(3) $\bar{x}, y + \frac{1}{2}, \bar{z} + \frac{1}{2}$	(4) $x + \frac{1}{2}, \bar{y} + \frac{1}{2}, \bar{z}$	$h00 : h = 2n$ $0k0 : k = 2n$ $00l : l = 2n$

Symmetry of special projections

Along [001] $p2gg$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $\frac{1}{4}, 0, z$

Along [100] $p2gg$
 $\mathbf{a}' = \mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, \frac{1}{4}, 0$

Along [010] $p2gg$
 $\mathbf{a}' = \mathbf{c}$ $\mathbf{b}' = \mathbf{a}$
 Origin at $0, y, \frac{1}{4}$

Maximal non-isomorphic subgroups

I [2] $P112_1 (P2_1, 4)$ 1; 2
 [2] $P12_11 (P2_1, 4)$ 1; 3
 [2] $P2_111 (P2_1, 4)$ 1; 4

IIa none

IIb none

Maximal isomorphic subgroups of lowest index

IIc [3] $P2_12_12_1 (\mathbf{a}' = 3\mathbf{a}$ or $\mathbf{b}' = 3\mathbf{b}$ or $\mathbf{c}' = 3\mathbf{c})$ (19)

Minimal non-isomorphic supergroups

I [2] $Pbca$ (61); [2] $Pnma$ (62); [2] $P4_12_12$ (92); [2] $P4_32_12$ (96); [3] $P2_13$ (198)

II [2] $A2_122 (C222_1, 20)$; [2] $B22_12 (C222_1, 20)$; [2] $C222_1$ (20); [2] $I2_12_12_1$ (24); [2] $P22_12_1 (\mathbf{a}' = \frac{1}{2}\mathbf{a})$ ($P2_12_12, 18$);
 [2] $P2_122_1 (\mathbf{b}' = \frac{1}{2}\mathbf{b})$ ($P2_12_12, 18$); [2] $P2_12_12 (\mathbf{c}' = \frac{1}{2}\mathbf{c})$ (18)