

$P3_212$

D_3^5

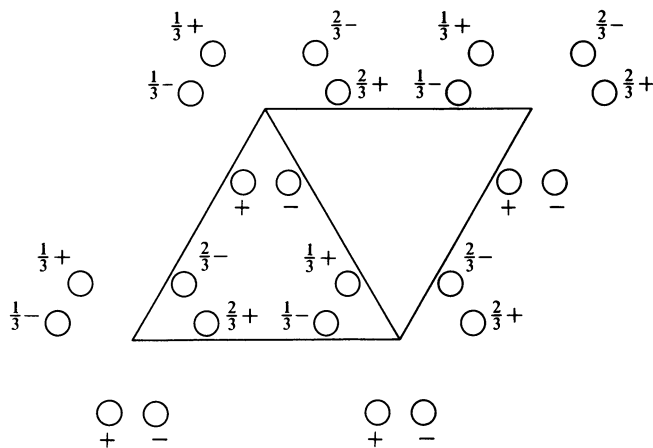
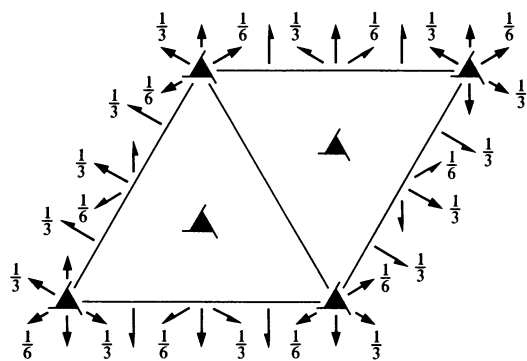
312

Trigonal

No. 153

$P3_212$

Patterson symmetry $P\bar{3}1m$



Origin on $2[210]$ at $3_21(1,1,2)$

Asymmetric unit $0 \leq x \leq 1; 0 \leq y \leq 1; 0 \leq z \leq \frac{1}{6}$
 Vertices $0,0,0$ $1,0,0$ $1,1,0$ $0,1,0$
 $0,0,\frac{1}{6}$ $1,0,\frac{1}{6}$ $1,1,\frac{1}{6}$ $0,1,\frac{1}{6}$

Symmetry operations

- (1) 1 (2) $3^+(0,0,\frac{2}{3})$ $0,0,z$ (3) $3^-(0,0,\frac{1}{3})$ $0,0,z$
 (4) 2 $x,\bar{x},\frac{1}{6}$ (5) 2 $x,2x,\frac{1}{3}$ (6) 2 $2x,x,0$

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

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates			Reflection conditions
6 <i>c</i> 1	(1) x, y, z (4) $\bar{y}, \bar{x}, \bar{z} + \frac{1}{3}$	(2) $\bar{y}, x - y, z + \frac{2}{3}$ (5) $\bar{x} + y, y, \bar{z} + \frac{2}{3}$	(3) $\bar{x} + y, \bar{x}, z + \frac{1}{3}$ (6) $x, x - y, \bar{z}$	General: $000l : l = 3n$ Special: no extra conditions
3 <i>b</i> .. 2	$x, \bar{x}, \frac{1}{6}$	$x, 2x, \frac{5}{6}$	$2\bar{x}, \bar{x}, \frac{1}{2}$	
3 <i>a</i> .. 2	$x, \bar{x}, \frac{2}{3}$	$x, 2x, \frac{1}{3}$	$2\bar{x}, \bar{x}, 0$	

Symmetry of special projections

Along [001] $p3m1$

$$\mathbf{a}' = \mathbf{a} \quad \mathbf{b}' = \mathbf{b}$$

Origin at 0, 0, z

Along [100] $p11m$

$$\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b}) \quad \mathbf{b}' = \mathbf{c}$$

Origin at $x, 0, \frac{1}{3}$

Along [210] $p2$

$$\mathbf{a}' = \frac{1}{2}\mathbf{b} \quad \mathbf{b}' = \mathbf{c}$$

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

Maximal non-isomorphic subgroups

I	[2] $P3_211$ ($P3_2, 145$)	1; 2; 3	
	{	[3] $P112$ ($C2, 5$)	1; 4
		[3] $P112$ ($C2, 5$)	1; 5
		[3] $P112$ ($C2, 5$)	1; 6

IIa none

IIb [3] $H3_212$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) ($P3_221, 154$)

Maximal isomorphic subgroups of lowest index

IIc [2] $P3_112$ ($\mathbf{c}' = 2\mathbf{c}$) (151); [4] $P3_212$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) (153); [7] $P3_212$ ($\mathbf{c}' = 7\mathbf{c}$) (153)

Minimal non-isomorphic supergroups

I [2] $P6_522$ (179); [2] $P6_222$ (180)

II [3] $H3_212$ ($P3_221, 154$); [3] $P312$ ($\mathbf{c}' = \frac{1}{3}\mathbf{c}$) (149)