

$P3_221$

D_3^6

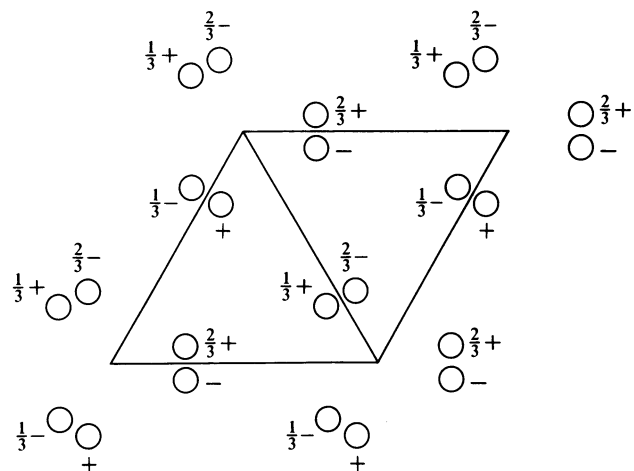
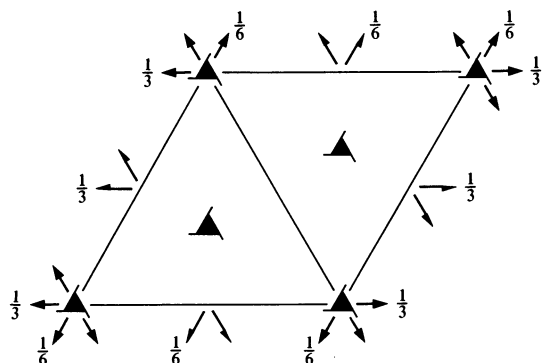
321

Trigonal

No. 154

$P3_221$

Patterson symmetry $P\bar{3}m1$



Origin on $2[110]$ at $3_2(1,1,2)1$

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 $x,x,0$ (5) 2 $x,0,\frac{1}{6}$ (6) 2 $0,y,\frac{1}{3}$

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

Symmetry of special projections

Along [001] $p31m$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at $0, 0, z$

Along [100] $p2$
 $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, 0, \frac{1}{6}$

Along [210] $p11m$
 $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x, \frac{1}{2}x, \frac{1}{3}$

Maximal non-isomorphic subgroups

I [2] $P3_211$ ($P3_2, 145$) 1; 2; 3
 { [3] $P121$ ($C2, 5$) 1; 4
 [3] $P121$ ($C2, 5$) 1; 5
 [3] $P121$ ($C2, 5$) 1; 6

IIa none

IIb [3] $H3_221$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) ($P3_212, 153$)

Maximal isomorphic subgroups of lowest index

IIc [2] $P3_121$ ($\mathbf{c}' = 2\mathbf{c}$) (152); [4] $P3_221$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$) (154); [7] $P3_221$ ($\mathbf{c}' = 7\mathbf{c}$) (154)

Minimal non-isomorphic supergroups

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

II [3] $H3_221$ ($P3_212, 153$); [3] $R32$ (obverse) (155); [3] $R32$ (reverse) (155); [3] $P321$ ($\mathbf{c}' = \frac{1}{3}\mathbf{c}$) (150)