

$P3_1$

C_3^2

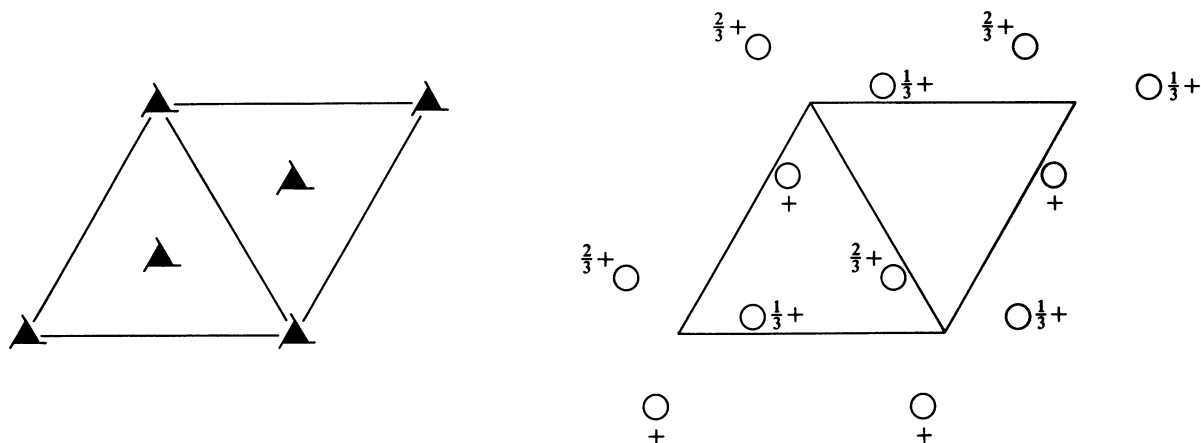
3

Trigonal

No. 144

$P3_1$

Patterson symmetry $P\bar{3}$



Origin on 3_1

Asymmetric unit $0 \leq x \leq 1; 0 \leq y \leq 1; 0 \leq z \leq \frac{1}{3}$
 Vertices $0,0,0$ $1,0,0$ $1,1,0$ $0,1,0$
 $0,0,\frac{1}{3}$ $1,0,\frac{1}{3}$ $1,1,\frac{1}{3}$ $0,1,\frac{1}{3}$

Symmetry operations

(1) 1 (2) $3^+(0,0,\frac{1}{3})$ $0,0,z$ (3) $3^-(0,0,\frac{2}{3})$ $0,0,z$

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

Positions

| Multiplicity, Wyckoff letter, Site symmetry | Coordinates | Reflection conditions |
|---|---|-----------------------------|
| 3 <i>a</i> 1 | (1) x,y,z (2) $\bar{y},x-y,z+\frac{1}{3}$ (3) $\bar{x}+y,\bar{x},z+\frac{2}{3}$ | General: $000l : l = 3n$ |

Symmetry of special projections

| Along $[001]$ $p3$ $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$ Origin at $0,0,z$ | Along $[100]$ $p1$ $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$ $\mathbf{b}' = \mathbf{c}$ Origin at $x,0,0$ | Along $[210]$ $p1$ $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$ Origin at $x,\frac{1}{2}x,0$ |
|--|---|--|
|--|---|--|

Maximal non-isomorphic subgroups

- I [3] $P1(1)$ 1
- IIa none
- IIb none

Maximal isomorphic subgroups of lowest index

IIc [2] $P3_2$ ($\mathbf{c}' = 2\mathbf{c}$) (145); [3] $H3_1$ ($\mathbf{a}' = 3\mathbf{a}, \mathbf{b}' = 3\mathbf{b}$) ($P3_1, 144$); [7] $P3_1$ ($\mathbf{c}' = 7\mathbf{c}$) (144)

Minimal non-isomorphic supergroups

- I [2] $P3_1 12$ (151); [2] $P3_1 21$ (152); [2] $P6_1$ (169); [2] $P6_4$ (172)
- II [3] $R3$ (obverse) (146); [3] $R3$ (reverse) (146); [3] $P3$ ($\mathbf{c}' = \frac{1}{3}\mathbf{c}$) (143)