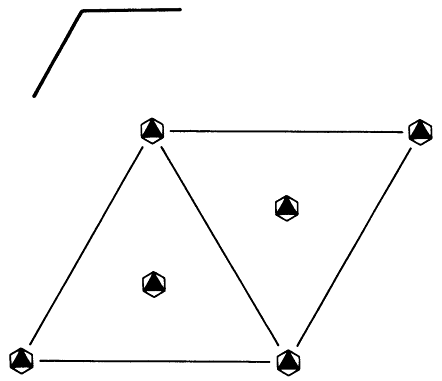
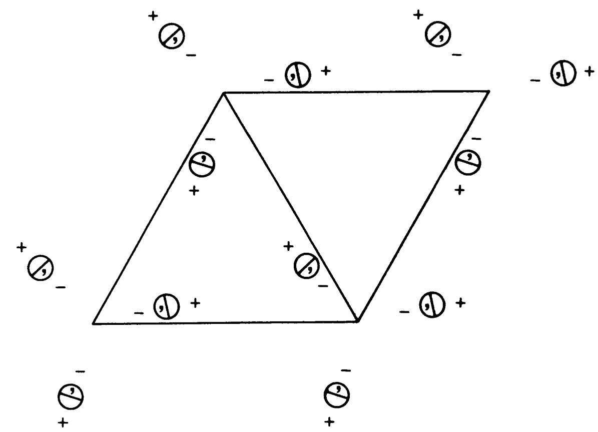
# $P\bar{6}$ $\quad C_{3h}^{1}$ $\quad \bar{6}$ $\quad$ Hexagonal

No. 174 $\quad P\bar{6}$ $\quad$ Patterson symmetry $P6/m$





**Origin** at $\bar{6}$

**Asymmetric unit** $0 \le x \le \frac{2}{3}$; $0 \le y \le \frac{2}{3}$; $0 \le z \le \frac{1}{2}$; $x \le (1+y)/2$; $y \le \min(1-x, (1+x)/2)$

Vertices $0,0,0$ $\quad \frac{1}{2},0,0$ $\quad \frac{2}{3},\frac{1}{3},0$ $\quad \frac{1}{3},\frac{2}{3},0$ $\quad 0,\frac{1}{2},0$

$0,0,\frac{1}{2}$ $\quad \frac{1}{2},0,\frac{1}{2}$ $\quad \frac{2}{3},\frac{1}{3},\frac{1}{2}$ $\quad \frac{1}{3},\frac{2}{3},\frac{1}{2}$ $\quad 0,\frac{1}{2},\frac{1}{2}$

## Symmetry operations

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

(4) $m$ $x,y,0$ $\quad$ (5) $\bar{6}^{-}$ $0,0,z$; $0,0,0$ $\quad$ (6) $\bar{6}^{+}$ $0,0,z$; $0,0,0$

**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 |
|---|---|---|---|---|---|---|
| | | | | | | General: |
| 6 | $l$ | 1 | (1) $x,y,z$ | (2) $\bar{y},x-y,z$ | (3) $\bar{x}+y,\bar{x},z$ | no conditions |
| | | | (4) $x,y,\bar{z}$ | (5) $\bar{y},x-y,\bar{z}$ | (6) $\bar{x}+y,\bar{x},\bar{z}$ | |
| | | | | | | Special: no extra conditions |
| 3 | $k$ | $m$ . . | $x,y,\frac{1}{2}$ | $\bar{y},x-y,\frac{1}{2}$ | $\bar{x}+y,\bar{x},\frac{1}{2}$ | |
| 3 | $j$ | $m$ . . | $x,y,0$ | $\bar{y},x-y,0$ | $\bar{x}+y,\bar{x},0$ | |
| 2 | $i$ | 3 . . | $\frac{2}{3},\frac{1}{3},z$ | $\frac{2}{3},\frac{1}{3},\bar{z}$ | | |
| 2 | $h$ | 3 . . | $\frac{1}{3},\frac{2}{3},z$ | $\frac{1}{3},\frac{2}{3},\bar{z}$ | | |
| 2 | $g$ | 3 . . | $0,0,z$ | $0,0,\bar{z}$ | | |
| 1 | $f$ | $\bar{6}$ . . | $\frac{2}{3},\frac{1}{3},\frac{1}{2}$ | | | |
| 1 | $e$ | $\bar{6}$ . . | $\frac{2}{3},\frac{1}{3},0$ | | | |
| 1 | $d$ | $\bar{6}$ . . | $\frac{1}{3},\frac{2}{3},\frac{1}{2}$ | | | |
| 1 | $c$ | $\bar{6}$ . . | $\frac{1}{3},\frac{2}{3},0$ | | | |
| 1 | $b$ | $\bar{6}$ . . | $0,0,\frac{1}{2}$ | | | |
| 1 | $a$ | $\bar{6}$ . . | $0,0,0$ | | | |

## Symmetry of special projections

Along [001] $p3$
$\mathbf{a}' = \mathbf{a}$ $\quad \mathbf{b}' = \mathbf{b}$
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 $x,0,0$

Along [210] $p11m$
$\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\quad \mathbf{b}' = \mathbf{c}$
Origin at $x,\frac{1}{2}x,0$