

$Ccc2$

$C_{2v}^{13}$

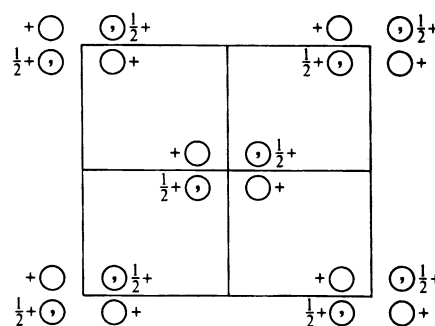
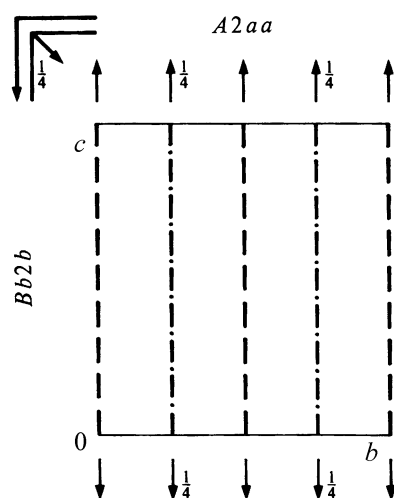
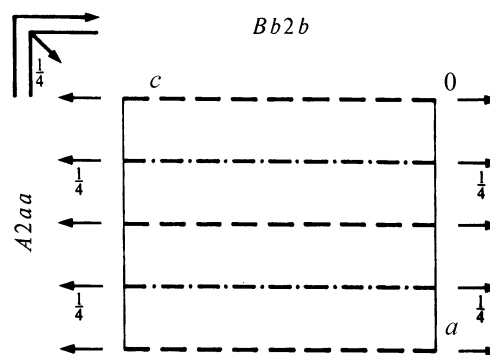
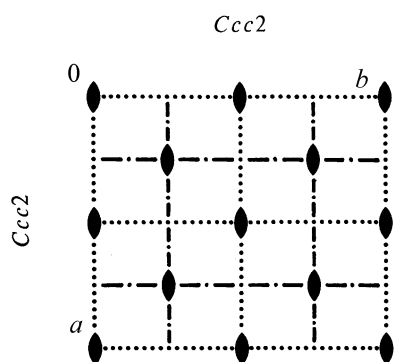
$mm2$

Orthorhombic

No. 37

$Ccc2$

Patterson symmetry  $Cmmm$



Origin on  $cc2$

Asymmetric unit  $0 \leq x \leq \frac{1}{4}; 0 \leq y \leq \frac{1}{2}; 0 \leq z \leq 1$

Symmetry operations

For  $(0,0,0)+$  set

- (1) 1                      (2)  $2 \ 0,0,z$                       (3)  $c \ x,0,z$                       (4)  $c \ 0,y,z$

For  $(\frac{1}{2},\frac{1}{2},0)+$  set

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

**Generators selected** (1);  $t(1,0,0)$ ;  $t(0,1,0)$ ;  $t(0,0,1)$ ;  $t(\frac{1}{2}, \frac{1}{2}, 0)$ ; (2); (3)

**Positions**

Multiplicity,  
Wyckoff letter,  
Site symmetry

Coordinates

$(0,0,0) + (\frac{1}{2}, \frac{1}{2}, 0) +$

Reflection conditions

General:

8 *d* 1 (1)  $x, y, z$  (2)  $\bar{x}, \bar{y}, z$  (3)  $x, \bar{y}, z + \frac{1}{2}$  (4)  $\bar{x}, y, z + \frac{1}{2}$

$hkl: h + k = 2n$

$0kl: k, l = 2n$

$h0l: h, l = 2n$

$hk0: h + k = 2n$

$h00: h = 2n$

$0k0: k = 2n$

$00l: l = 2n$

Special: as above, plus

4 *c* .. 2  $\frac{1}{4}, \frac{1}{4}, z$   $\frac{1}{4}, \frac{3}{4}, z + \frac{1}{2}$

$hkl: k + l = 2n$

4 *b* .. 2  $0, \frac{1}{2}, z$   $0, \frac{1}{2}, z + \frac{1}{2}$

$hkl: l = 2n$

4 *a* .. 2  $0, 0, z$   $0, 0, z + \frac{1}{2}$

$hkl: l = 2n$

**Symmetry of special projections**

Along [001]  $c2mm$

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

Origin at  $0, 0, z$

Along [100]  $p1m1$

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

Origin at  $x, 0, 0$

Along [010]  $p11m$

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

Origin at  $0, y, 0$