

$C222_1$

D_2^5

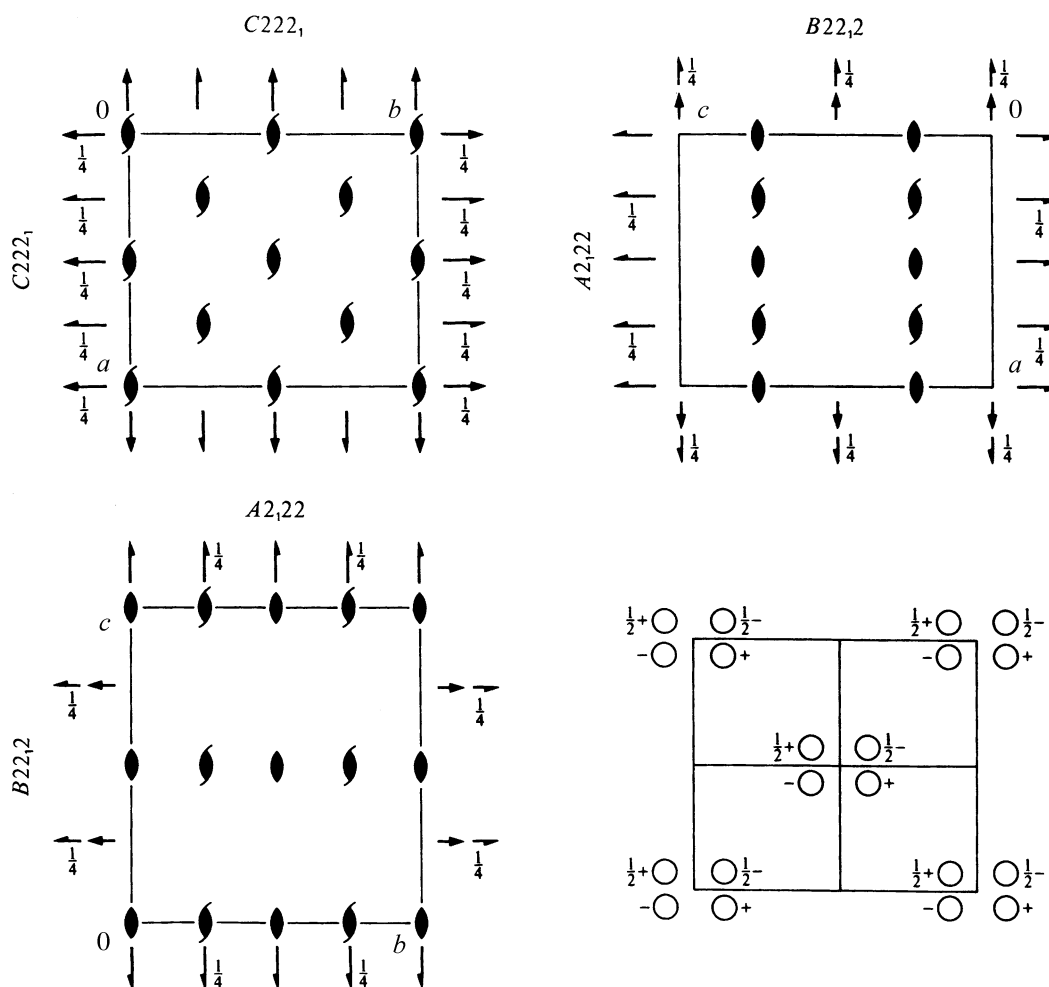
222

Orthorhombic

No. 20

$C222_1$

Patterson symmetry $Cmmm$



Origin at 212_1

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

Symmetry operations

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

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

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

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

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

$hkl: h + k = 2n$

$0kl: k = 2n$

$h0l: h = 2n$

$hk0: h + k = 2n$

$h00: h = 2n$

$0k0: k = 2n$

$00l: l = 2n$

Special: as above, plus

4 *b* .2. $0, y, \frac{1}{4}$ $0, \bar{y}, \frac{3}{4}$

$h0l: l = 2n$

4 *a* 2.. $x, 0, 0$ $\bar{x}, 0, \frac{1}{2}$

$0kl: l = 2n$

Symmetry of special projections

Along [001] $c2mm$

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

Origin at $0, 0, z$

Along [100] $p2gm$

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

Origin at $x, 0, 0$

Along [010] $p2mg$

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

Origin at $0, y, \frac{1}{4}$