

$Pnn2$

C_{2v}^{10}

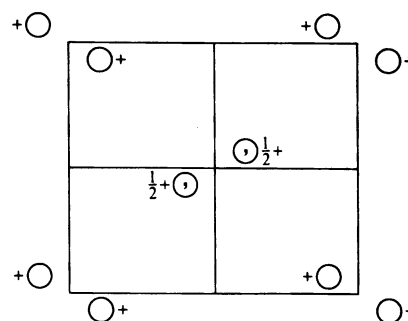
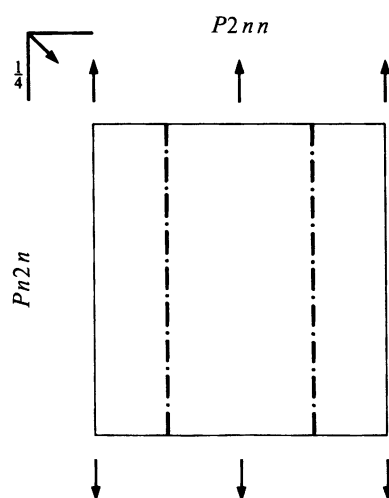
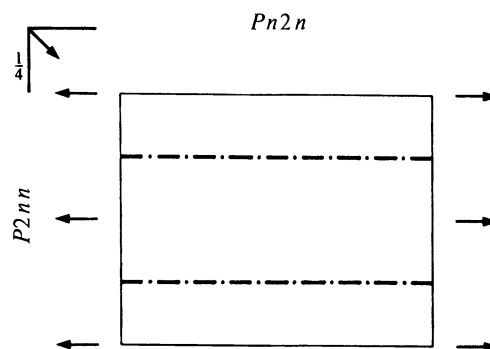
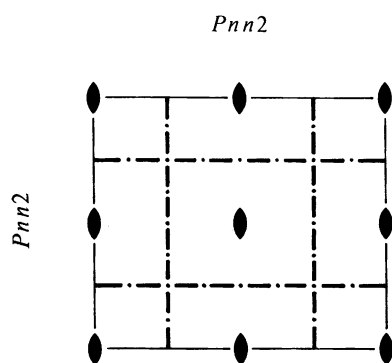
$mm2$

Orthorhombic

No. 34

$Pnn2$

Patterson symmetry $Pmmm$



Origin on 112

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

Symmetry operations

- (1) 1 (2) 2 $0,0,z$ (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); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (3)

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates				Reflection conditions
4 <i>c</i> 1	(1) x,y,z	(2) \bar{x},\bar{y},z	(3) $x+\frac{1}{2},\bar{y}+\frac{1}{2},z+\frac{1}{2}$	(4) $\bar{x}+\frac{1}{2},y+\frac{1}{2},z+\frac{1}{2}$	General: $Ok\bar{l} : k+l=2n$ $h0\bar{l} : h+l=2n$ $h00 : h=2n$ $0k0 : k=2n$ $00\bar{l} : l=2n$ Special: as above, plus $hkl : h+k+l=2n$ $hkl : h+k+l=2n$
2 <i>b</i> ..2	$0,\frac{1}{2},z$	$\frac{1}{2},0,z+\frac{1}{2}$			$hkl : h+k+l=2n$
2 <i>a</i> ..2	$0,0,z$	$\frac{1}{2},\frac{1}{2},z+\frac{1}{2}$			$hkl : h+k+l=2n$

Symmetry of special projections

Along [001] $p2gg$
 $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$
 Origin at 0,0,z

Along [100] $c1m1$
 $\mathbf{a}' = \mathbf{b}$ $\mathbf{b}' = \mathbf{c}$
 Origin at $x,0,0$

Along [010] $c11m$
 $\mathbf{a}' = \mathbf{c}$ $\mathbf{b}' = \mathbf{a}$
 Origin at 0,y,0

Maximal non-isomorphic subgroups

I [2] $P1n1$ (Pc , 7) 1; 3
 [2] $Pn11$ (Pc , 7) 1; 4
 [2] $P112$ ($P2$, 3) 1; 2

IIa none

IIb [2] $Fdd2$ ($\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$) (43)

Maximal isomorphic subgroups of lowest index

IIc [3] $Pnn2$ ($\mathbf{a}' = 3\mathbf{a}$ or $\mathbf{b}' = 3\mathbf{b}$) (34); [3] $Pnn2$ ($\mathbf{c}' = 3\mathbf{c}$) (34)

Minimal non-isomorphic supergroups

I [2] $Pnnn$ (48); [2] $Pnna$ (52); [2] $Pnmm$ (58); [2] $P4_2nm$ (102); [2] $P4nc$ (104); [2] $P\bar{4}n2$ (118)

II [2] $Ccc2$ (37); [2] $Ama2$ (40); [2] $Bbm2$ ($Ama2$, 40); [2] $Imm2$ (44); [2] $Pnc2$ ($\mathbf{a}' = \frac{1}{2}\mathbf{a}$) (30); [2] $Pcn2$ ($\mathbf{b}' = \frac{1}{2}\mathbf{b}$) ($Pnc2$, 30);
 [2] $Pba2$ ($\mathbf{c}' = \frac{1}{2}\mathbf{c}$) (32)