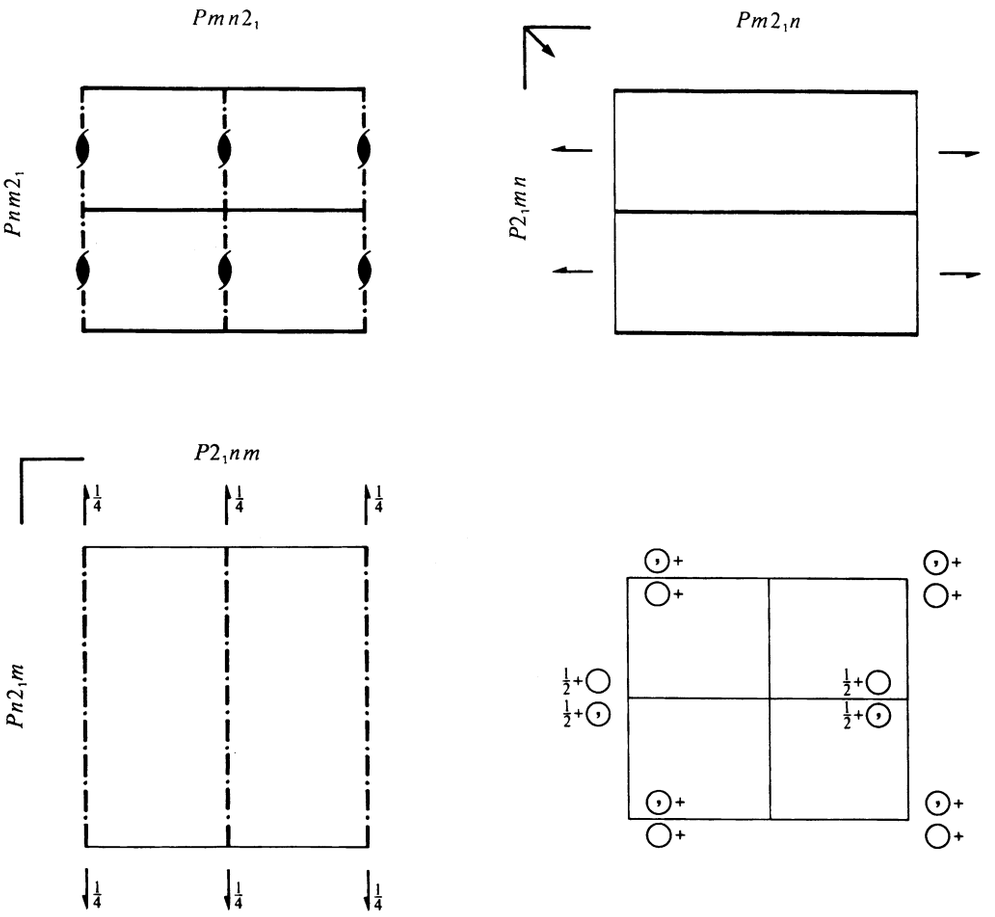
$Pmn2_1$ C_{2v}^7 $mm2$ Orthorhombic

No. 31 $Pmn2_1$ Patterson symmetry $Pmmm$



Origin on $mn1$

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

Symmetry operations

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

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 b 1	(1) x,y,z	(2) $\bar{x}+\frac{1}{2},\bar{y},z+\frac{1}{2}$	(3) $x+\frac{1}{2},\bar{y},z+\frac{1}{2}$	(4) $\bar{x},y,z$	General: $h0l$: $h+l=2n$; $h00$: $h=2n$; $00l$: $l=2n$
					Special: no extra conditions
2 a m . .	$0,y,z$	$\frac{1}{2},\bar{y},z+\frac{1}{2}$			

Symmetry of special projections

Along [001] $p2mg$
$\mathbf{a}'=\mathbf{a}$ $\mathbf{b}'=\mathbf{b}$
Origin at $\frac{1}{4},0,z$

Along [100] $p1g1$
$\mathbf{a}'=\mathbf{b}$ $\mathbf{b}'=\mathbf{c}$
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] $Pm11$ (Pm, 6) 1; 4
[2] $P112_1$ ($P2_1$, 4) 1; 2

IIa none

IIb [2] $Pbn2_1$ ($\mathbf{b}'=2\mathbf{b}$) ($Pna2_1$, 33)

Maximal isomorphic subgroups of lowest index

IIc [2] $Pmn2_1$ ($\mathbf{b}'=2\mathbf{b}$) (31); [3] $Pmn2_1$ ($\mathbf{a}'=3\mathbf{a}$) (31); [3] $Pmn2_1$ ($\mathbf{c}'=3\mathbf{c}$) (31)

Minimal non-isomorphic supergroups

I [2] $Pmna$ (53); [2] $Pnnm$ (58); [2] $Pmmn$ (59); [2] $Pnma$ (62)

II [2] $Cmc2_1$ (36); [2] $Bmm2$ ($Amm2$, 38); [2] $Ama2$ (40); [2] $Imm2$ (44); [2] $Pmc2_1$ ($\mathbf{a}'=\frac{1}{2}\mathbf{a}$) (26); [2] $Pma2$ ($\mathbf{c}'=\frac{1}{2}\mathbf{c}$) (28)