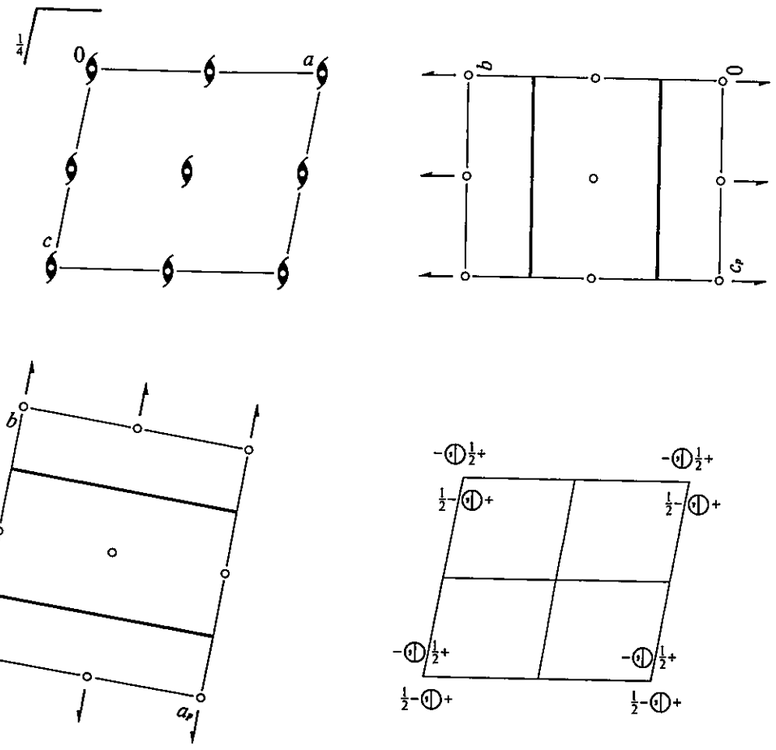
$P2_1/m$ C_{2h}^2 $2/m$ Monoclinic

No. 11 $P\,1\,2_1/m\,1$ Patterson symmetry $P\,1\,2/m\,1$

UNIQUE AXIS b



Origin at $\bar{1}$ on 2_1

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

Symmetry operations

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

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	f	1	(1) x,y,z	(2) $\bar{x},y+\frac{1}{2},\bar{z}$	(3) $\bar{x},\bar{y},\bar{z}$	(4) $x,\bar{y}+\frac{1}{2},z$	General: $0k0$: $k=2n$
2	e	m	$x,\frac{1}{4},z$	$\bar{x},\frac{3}{4},\bar{z}$			Special: as above, plus no extra conditions
2	d	$\bar{1}$	$\frac{1}{2},0,\frac{1}{2}$	$\frac{1}{2},\frac{1}{2},\frac{1}{2}$			hkl : $k=2n$
2	c	$\bar{1}$	$0,0,\frac{1}{2}$	$0,\frac{1}{2},\frac{1}{2}$			hkl : $k=2n$
2	b	$\bar{1}$	$\frac{1}{2},0,0$	$\frac{1}{2},\frac{1}{2},0$			hkl : $k=2n$
2	a	$\bar{1}$	$0,0,0$	$0,\frac{1}{2},0$			hkl : $k=2n$

Symmetry of special projections

Along [001] $p\,2g\,m$
$\boldsymbol{a}'=\boldsymbol{a}_p$ $\boldsymbol{b}'=\boldsymbol{b}$
Origin at $0,0,z$

Along [100] $p\,2m\,g$
$\boldsymbol{a}'=\boldsymbol{b}$ $\boldsymbol{b}'=\boldsymbol{c}_p$
Origin at $x,0,0$

Along [010] $p\,2$
$\boldsymbol{a}'=\boldsymbol{c}$ $\boldsymbol{b}'=\boldsymbol{a}$
Origin at $0,y,0$

Maximal non-isomorphic subgroups

I [2]$P\,1\,2_1\,1$ $(P\,2_1)$ 1; 2
[2]$P\,\bar{1}$ 1; 3
[2]$P\,1m\,1$ (Pm) 1; 4

IIa none

IIb [2]$P\,1\,2_1/c\,1$ $(\boldsymbol{c}'=2\boldsymbol{c})(P\,2_1/c)$; [2]$P\,1\,2_1/a\,1$ $(\boldsymbol{a}'=2\boldsymbol{a})(P\,2_1/c)$; [2]$B\,1\,2_1/a\,1$ $(\boldsymbol{a}'=2\boldsymbol{a},\boldsymbol{c}'=2\boldsymbol{c})(P\,2_1/c)$

Maximal isomorphic subgroups of lowest index

IIc [3]$P\,1\,2_1/m\,1$ $(\boldsymbol{b}'=3\boldsymbol{b})(P\,2_1/m)$; [2]$P\,1\,2_1/m\,1$ $(\boldsymbol{c}'=2\boldsymbol{c}$ or $\boldsymbol{a}'=2\boldsymbol{a}$ or $\boldsymbol{a}'=\boldsymbol{a}+\boldsymbol{c},\boldsymbol{c}'=-\boldsymbol{a}+\boldsymbol{c})(P\,2_1/m)$

Minimal non-isomorphic supergroups

I [2]$P\,m\,m\,a$; [2]$P\,b\,c\,m$; [2]$P\,m\,m\,n$; [2]$P\,n\,m\,a$; [2]$C\,m\,c\,m$; [3]$P\,6_3/m$

II [2]$C\,1\,2/m\,1$ $(C\,2/m)$; [2]$A\,1\,2/m\,1$ $(C\,2/m)$; [2]$I\,1\,2/m\,1$ $(C\,2/m)$; [2]$P\,1\,2/m\,1$ $(2\boldsymbol{b}'=\boldsymbol{b})(P\,2/m)$