

$P\bar{3}m1$

D_{3d}^3

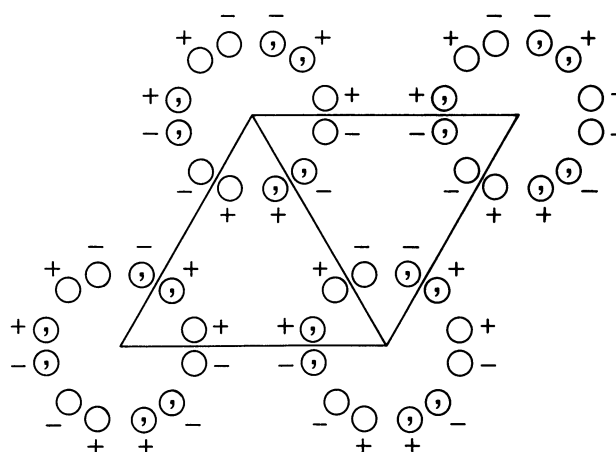
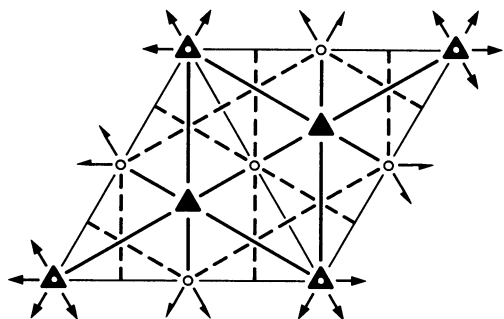
$\bar{3}m1$

Trigonal

No. 164

$P\bar{3}2/m1$

Patterson symmetry $P\bar{3}m1$



Origin at centre ($\bar{3}m1$)

Asymmetric unit $0 \leq x \leq \frac{2}{3}$; $0 \leq y \leq \frac{1}{3}$; $0 \leq z \leq 1$; $x \leq (1+y)/2$; $y \leq x/2$

Vertices $0,0,0$ $\frac{1}{2},0,0$ $\frac{2}{3},\frac{1}{3},0$
 $0,0,1$ $\frac{1}{2},0,1$ $\frac{2}{3},\frac{1}{3},1$

Symmetry operations

- (1) 1 (2) 3^+ $0,0,z$ (3) 3^- $0,0,z$
- (4) 2 $x,x,0$ (5) 2 $x,0,0$ (6) 2 $0,y,0$
- (7) $\bar{1}$ $0,0,0$ (8) $\bar{3}^+$ $0,0,z$; $0,0,0$ (9) $\bar{3}^-$ $0,0,z$; $0,0,0$
- (10) m x,\bar{x},z (11) m $x,2x,z$ (12) m $2x,x,z$

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; (2); (4); (7)

Positions

Multiplicity, Wyckoff letter, Site symmetry	Coordinates	Reflection conditions
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12	j	1	(1) x,y,z	(2) $\bar{y},x-y,z$	(3) $\bar{x}+y,\bar{x},z$	General: no conditions
			(4) y,x,\bar{z}	(5) $x-y,\bar{y},\bar{z}$	(6) $\bar{x},\bar{x}+y,\bar{z}$	
			(7) \bar{x},\bar{y},\bar{z}	(8) $y,\bar{x}+y,\bar{z}$	(9) $x-y,x,\bar{z}$	
			(10) \bar{y},\bar{x},z	(11) $\bar{x}+y,y,z$	(12) $x,x-y,z$	

Special: no extra conditions

6	i	$.m.$	x,\bar{x},z	$x,2x,z$	$2\bar{x},\bar{x},z$	\bar{x},x,\bar{z}	$2x,x,\bar{z}$	$\bar{x},2\bar{x},\bar{z}$
6	h	$.2.$	$x,0,\frac{1}{2}$	$0,x,\frac{1}{2}$	$\bar{x},\bar{x},\frac{1}{2}$	$\bar{x},0,\frac{1}{2}$	$0,\bar{x},\frac{1}{2}$	$x,x,\frac{1}{2}$
6	g	$.2.$	$x,0,0$	$0,x,0$	$\bar{x},\bar{x},0$	$\bar{x},0,0$	$0,\bar{x},0$	$x,x,0$
3	f	$.2/m.$	$\frac{1}{2},0,\frac{1}{2}$	$0,\frac{1}{2},\frac{1}{2}$	$\frac{1}{2},\frac{1}{2},\frac{1}{2}$			
3	e	$.2/m.$	$\frac{1}{2},0,0$	$0,\frac{1}{2},0$	$\frac{1}{2},\frac{1}{2},0$			
2	d	$3m.$	$\frac{1}{3},\frac{2}{3},z$	$\frac{2}{3},\frac{1}{3},\bar{z}$				
2	c	$3m.$	$0,0,z$	$0,0,\bar{z}$				
1	b	$\bar{3}m.$	$0,0,\frac{1}{2}$					
1	a	$\bar{3}m.$	$0,0,0$					

Symmetry of special projections

Along [001] $p6mm$ $\mathbf{a}' = \mathbf{a}$ $\mathbf{b}' = \mathbf{b}$ Origin at $0,0,z$	Along [100] $p2$ $\mathbf{a}' = \frac{1}{2}(\mathbf{a} + 2\mathbf{b})$ $\mathbf{b}' = \mathbf{c}$ Origin at $x,0,0$	Along [210] $p2mm$ $\mathbf{a}' = \frac{1}{2}\mathbf{b}$ $\mathbf{b}' = \mathbf{c}$ Origin at $x,\frac{1}{2}x,0$
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