

$P\bar{4}n2$ 

No. 118

 $P\bar{4}n2$ 
 $D_{2d}^8$ 
**Generators selected** (1);  $t(1,0,0)$ ;  $t(0,1,0)$ ;  $t(0,0,1)$ ; (2); (3); (5)

**General position**

 Multiplicity,  
Wyckoff letter,  
Site symmetry

Coordinates

8	<i>i</i>	1	(1) $x, y, z$	(2) $\bar{x}, \bar{y}, z$	(3) $y, \bar{x}, \bar{z}$	(4) $\bar{y}, x, \bar{z}$
			(5) $x + \frac{1}{2}, \bar{y} + \frac{1}{2}, z + \frac{1}{2}$	(6) $\bar{x} + \frac{1}{2}, y + \frac{1}{2}, z + \frac{1}{2}$	(7) $y + \frac{1}{2}, x + \frac{1}{2}, \bar{z} + \frac{1}{2}$	(8) $\bar{y} + \frac{1}{2}, \bar{x} + \frac{1}{2}, \bar{z} + \frac{1}{2}$

**I Maximal translationengleiche subgroups**

[2] $P\bar{4}11$ (81, $P\bar{4}$ )	1; 2; 3; 4		
[2] $P2n1$ (34, $Pnn2$ )	1; 2; 5; 6		
[2] $P212$ (21, $C222$ )	1; 2; 7; 8	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, \mathbf{c}$	0, 1/2, 1/4

**II Maximal klassengleiche subgroups**

## • Enlarged unit cell

[2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}, \mathbf{c}' = 2\mathbf{c}$			
$F\bar{4}d2$ (122, $I\bar{4}2d$ )	$\langle 2; 3; 5 \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, 2\mathbf{c}$	
$F\bar{4}d2$ (122, $I\bar{4}2d$ )	$\langle 2; 5; 3 + (0, 0, 1) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, 2\mathbf{c}$	0, 0, 1/2
$F\bar{4}d2$ (122, $I\bar{4}2d$ )	$\langle 2; 3 + (1, 0, 0); 5 + (0, 1, 0) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, 2\mathbf{c}$	1/2, 1/2, 0
$F\bar{4}d2$ (122, $I\bar{4}2d$ )	$\langle 2; 3 + (1, 0, 1); 5 + (0, 1, 0) \rangle$	$\mathbf{a} - \mathbf{b}, \mathbf{a} + \mathbf{b}, 2\mathbf{c}$	1/2, 1/2, 1/2
[3] $\mathbf{c}' = 3\mathbf{c}$			
$P\bar{4}n2$ (118)	$\langle 2; 3; 5 + (0, 0, 1) \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	
$P\bar{4}n2$ (118)	$\langle 2; 3 + (0, 0, 2); 5 + (0, 0, 1) \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	0, 0, 1
$P\bar{4}n2$ (118)	$\langle 2; 3 + (0, 0, 4); 5 + (0, 0, 1) \rangle$	$\mathbf{a}, \mathbf{b}, 3\mathbf{c}$	0, 0, 2

## • Series of maximal isomorphic subgroups

[ <i>p</i> ] $\mathbf{c}' = p\mathbf{c}$			
$P\bar{4}n2$ (118)	$\langle 2; 3 + (0, 0, 2u); 5 + (0, 0, \frac{p}{2} - \frac{1}{2}) \rangle$ prime $p > 2$ ; $0 \leq u < p$ $p$ conjugate subgroups	$\mathbf{a}, \mathbf{b}, p\mathbf{c}$	0, 0, $u$
[ $p^2$ ] $\mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$			
$P\bar{4}n2$ (118)	$\langle 2 + (2u, 2v, 0); 3 + (u - v, u + v, 0); 5 + (\frac{p}{2} - \frac{1}{2}, \frac{p}{2} - \frac{1}{2} + 2v, 0) \rangle$ prime $p > 2$ ; $0 \leq u < p$ ; $0 \leq v < p$ $p^2$ conjugate subgroups	$p\mathbf{a}, p\mathbf{b}, \mathbf{c}$	$u, v, 0$

**I Minimal translationengleiche supergroups**

 [2]  $P4/nnc$  (126); [2]  $P4/mnc$  (128); [2]  $P4_2/nm$  (134); [2]  $P4_2/mmm$  (136)

**II Minimal non-isomorphic klassengleiche supergroups**

## • Additional centring translations

 [2]  $C\bar{4}c2$  (112,  $P\bar{4}2c$ ); [2]  $I\bar{4}m2$  (119)

## • Decreased unit cell

 [2]  $\mathbf{c}' = \frac{1}{2}\mathbf{c}$   $P\bar{4}b2$  (117)