

$Pna2_1$ 

No. 33

 $Pna2_1$ 
 $C_{2v}^9$ 
**Generators selected** (1);  $t(1,0,0)$ ;  $t(0,1,0)$ ;  $t(0,0,1)$ ; (2); (3)

**General position**

 Multiplicity,  
 Wyckoff letter,  
 Site symmetry

Coordinates

 4  $a$  1 (1)  $x, y, z$  (2)  $\bar{x}, \bar{y}, z + \frac{1}{2}$  (3)  $x + \frac{1}{2}, \bar{y} + \frac{1}{2}, z$  (4)  $\bar{x} + \frac{1}{2}, y + \frac{1}{2}, z + \frac{1}{2}$ 
**I Maximal translationengleiche subgroups**

[2] $P1a1$ (7, $P1c1$ )	1; 3	$-a - c, b, a$	0, 1/4, 0
[2] $Pn11$ (7, $P1c1$ )	1; 4	$b, a, -b - c$	1/4, 0, 0
[2] $P112_1$ (4)	1; 2		

**II Maximal klassengleiche subgroups**

## • Enlarged unit cell

[3] $a' = 3a$			
$\left\{ \begin{array}{l} Pna2_1 (33) \\ Pna2_1 (33) \\ Pna2_1 (33) \end{array} \right.$	$\langle 2; 3 + (1, 0, 0) \rangle$ $\langle 2 + (2, 0, 0); 3 + (1, 0, 0) \rangle$ $\langle 2 + (4, 0, 0); 3 + (1, 0, 0) \rangle$	$3a, b, c$ $3a, b, c$ $3a, b, c$	 1, 0, 0 2, 0, 0
[3] $b' = 3b$			
$\left\{ \begin{array}{l} Pna2_1 (33) \\ Pna2_1 (33) \\ Pna2_1 (33) \end{array} \right.$	$\langle 2; 3 + (0, 1, 0) \rangle$ $\langle 2 + (0, 2, 0); 3 + (0, 3, 0) \rangle$ $\langle 2 + (0, 4, 0); 3 + (0, 5, 0) \rangle$	$a, 3b, c$ $a, 3b, c$ $a, 3b, c$	 0, 1, 0 0, 2, 0
[3] $c' = 3c$			
$Pna2_1 (33)$	$\langle 3; 2 + (0, 0, 1) \rangle$	$a, b, 3c$	

## • Series of maximal isomorphic subgroups

[ $p$ ] $a' = pa$			
$Pna2_1 (33)$	$\langle 2 + (2u, 0, 0); 3 + (\frac{p}{2} - \frac{1}{2}, 0, 0) \rangle$ $p > 2; 0 \leq u < p$ $p$ conjugate subgroups for the prime $p$	$pa, b, c$	$u, 0, 0$
[ $p$ ] $b' = pb$			
$Pna2_1 (33)$	$\langle 2 + (0, 2u, 0); 3 + (0, \frac{p}{2} - \frac{1}{2} + 2u, 0) \rangle$ $p > 2; 0 \leq u < p$ $p$ conjugate subgroups for the prime $p$	$a, pb, c$	$0, u, 0$
[ $p$ ] $c' = pc$			
$Pna2_1 (33)$	$\langle 3; 2 + (0, 0, \frac{p}{2} - \frac{1}{2}) \rangle$ $p > 2$ no conjugate subgroups	$a, b, pc$	

**I Minimal translationengleiche supergroups**

 [2]  $Pnna$  (52); [2]  $Pccn$  (56); [2]  $Pbcn$  (60); [2]  $Pnma$  (62)

**II Minimal non-isomorphic klassengleiche supergroups**

## • Additional centring translations

 [2]  $Ccm2_1$  (36,  $Cmc2_1$ ); [2]  $Ama2$  (40); [2]  $Bbe2$  (41,  $Aea2$ ); [2]  $Ima2$  (46)

## • Decreased unit cell

 [2]  $b' = \frac{1}{2}b$   $Pca2_1$  (29); [2]  $a' = \frac{1}{2}a$   $Pnm2_1$  (31,  $Pmn2_1$ ); [2]  $c' = \frac{1}{2}c$   $Pba2$  (32)