

$C_{4v}^7$ 
 $P4_2mc$ 

No. 105

 $P4_2mc$ 
**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>f</i> | 1 |  | (1) $x, y, z$       | (2) $\bar{x}, \bar{y}, z$ | (3) $\bar{y}, x, z + \frac{1}{2}$       | (4) $y, \bar{x}, z + \frac{1}{2}$ |
|   |          |   |  | (5) $x, \bar{y}, z$ | (6) $\bar{x}, y, z$       | (7) $\bar{y}, \bar{x}, z + \frac{1}{2}$ | (8) $y, x, z + \frac{1}{2}$       |

**I Maximal translationengleiche subgroups**

|                            |            |                        |
|----------------------------|------------|------------------------|
| [2] $P4_211$ (77, $P4_2$ ) | 1; 2; 3; 4 |                        |
| [2] $P21c$ (37, $Ccc2$ )   | 1; 2; 7; 8 | <b>a – b, a + b, c</b> |
| [2] $P2m1$ (25, $Pmm2$ )   | 1; 2; 5; 6 |                        |

**II Maximal klassengleiche subgroups**

## • Enlarged unit cell

|  |   |                        |
|--|---|------------------------|
| [2] $\mathbf{a}' = 2\mathbf{a}, \mathbf{b}' = 2\mathbf{b}$ |   |                        |
| $C4_2md$ (102, $P4_2nm$ )                                  | $\langle 2; 3; 5 + (0, 1, 0) \rangle$             | <b>a – b, a + b, c</b> |
| $C4_2md$ (102, $P4_2nm$ )                                  | $\langle 2; 5; 3 + (1, 0, 0) \rangle$             | <b>a – b, a + b, c</b> |
| $C4_2mc$ (101, $P4_2cm$ )                                  | $\langle 2; 3; 5 \rangle$                         | <b>a – b, a + b, c</b> |
| $C4_2mc$ (101, $P4_2cm$ )                                  | $\langle 2; 3 + (1, 0, 0); 5 + (0, 1, 0) \rangle$ | <b>a – b, a + b, c</b> |
| [3] $\mathbf{c}' = 3\mathbf{c}$                            |   | 1/2, 1/2, 0            |
| $P4_2mc$ (105)   | $\langle 2; 5; 3 + (0, 0, 1) \rangle$             | <b>a, b, 3c</b>        |

## • Series of maximal isomorphic subgroups

|  |   |                  |
|--|---|------------------|
| [ <i>p</i> ] $\mathbf{c}' = p\mathbf{c}$                         |   |                  |
| $P4_2mc$ (105)   | $\langle 2; 5; 3 + (0, 0, \frac{p}{2} - \frac{1}{2}) \rangle$             | <b>a, b, pc</b>  |
|  | $p > 2$   |                  |
|  | no conjugate subgroups  |                  |
| [ $p^2$ ] $\mathbf{a}' = p\mathbf{a}, \mathbf{b}' = p\mathbf{b}$ |   |                  |
| $P4_2mc$ (105)   | $\langle 2 + (2u, 2v, 0); 3 + (u + v, -u + v, 0); 5 + (0, 2v, 0) \rangle$ | <b>pa, pb, c</b> |
|  | $p > 2; 0 \leq u < p; 0 \leq v < p$                                       | u, v, 0          |
|  | $p^2$ conjugate subgroups for the prime <i>p</i>                          |                  |

**I Minimal translationengleiche supergroups**

 [2]  $P4_2/mmc$  (131); [2]  $P4_2/nmc$  (137)

**II Minimal non-isomorphic klassengleiche supergroups**

## • Additional centring translations

 [2]  $C4_2mc$  (101,  $P4_2cm$ ); [2]  $I4mm$  (107)

## • Decreased unit cell

 [2]  $\mathbf{c}' = \frac{1}{2}\mathbf{c}$   $P4mm$  (99)