$I4/m$ No. 87 $I4/m$ C_{4h}^5

Generators selected (1); $t(1,0,0)$; $t(0,1,0)$; $t(0,0,1)$; $t(\frac{1}{2},\frac{1}{2},\frac{1}{2})$; (2); (3); (5)

General position

Multiplicity, Wyckoff letter, Site symmetry	Coordinates $(0,0,0)+$ $(\frac{1}{2},\frac{1}{2},\frac{1}{2})+$			
16 i 1	(1) x,y,z	(2) $\bar{x},\bar{y},z$	(3) $\bar{y},x,z$	(4) $y,\bar{x},z$
	(5) $\bar{x},\bar{y},\bar{z}$	(6) $x,y,\bar{z}$	(7) $y,\bar{x},\bar{z}$	(8) $\bar{y},x,\bar{z}$

I Maximal *translationengleiche* subgroups

[2] $I\bar{4}$ (82)	(1; 2; 7; 8)+	
[2] $I4$ (79)	(1; 2; 3; 4)+	
[2] $I2/m$ (12, $A112/m$)	(1; 2; 5; 6)+	$\mathbf{b},-\mathbf{a}-\mathbf{b},\mathbf{c}$

II Maximal *klassengleiche* subgroups

- **Loss of centring translations**

[2] $P4_2/n$ (86)	$1;2;7;8;(3;4;5;6)+(\frac{1}{2},\frac{1}{2},\frac{1}{2})$		$1/4,1/4,1/4$
[2] $P4/n$ (85)	$1;2;3;4;(5;6;7;8)+(\frac{1}{2},\frac{1}{2},\frac{1}{2})$		$1/4,1/4,1/4$
[2] $P4_2/m$ (84)	$1;2;5;6;(3;4;7;8)+(\frac{1}{2},\frac{1}{2},\frac{1}{2})$		$0,1/2,0$
[2] $P4/m$ (83)	1; 2; 3; 4; 5; 6; 7; 8		

- **Enlarged unit cell**

[3] $\mathbf{c}'=3\mathbf{c}$

$I4/m$ (87)	$\langle 2;3;5\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	
$I4/m$ (87)	$\langle 2;3;5+(0,0,2)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,1$
$I4/m$ (87)	$\langle 2;3;5+(0,0,4)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,2$

- **Series of maximal isomorphic subgroups**

[p] $\mathbf{c}'=p\mathbf{c}$

$I4/m$ (87)	$\langle 2;3;5+(0,0,2u)\rangle$ prime $p>2$; $0\le u<p$ p conjugate subgroups	$\mathbf{a},\mathbf{b},p\mathbf{c}$	$0,0,u$

[p^2] $\mathbf{a}'=p\mathbf{a}$, $\mathbf{b}'=p\mathbf{b}$

$I4/m$ (87)	$\langle (2;5)+(2u,2v,0);3+(u+v,-u+v,0)\rangle$ prime $p>2$; $0\le u<p$; $0\le v<p$ p^2 conjugate subgroups for $p=4n-1$	$p\mathbf{a},p\mathbf{b},\mathbf{c}$	$u,v,0$

[$p=q^2+r^2$] $\mathbf{a}'=q\mathbf{a}-r\mathbf{b}$, $\mathbf{b}'=r\mathbf{a}+q\mathbf{b}$

$I4/m$ (87)	$\langle (2;5)+(2u,0,0);3+(u,-u,0)\rangle$ prime $p>4$; $q>0$; $r>0$; $0\le u<p$ p conjugate subgroups for $p=4n+1$	$q\mathbf{a}-r\mathbf{b},r\mathbf{a}+q\mathbf{b},\mathbf{c}$	$u,0,0$

I Minimal *translationengleiche* supergroups

[2] $I4/mmm$ (139); [2] $I4/mcm$ (140)

II Minimal non-isomorphic *klassengleiche* supergroups

- **Additional centring translations** none

- **Decreased unit cell**

[2] $\mathbf{c}'=\frac{1}{2}\mathbf{c}$ $C4/m$ (83, $P4/m$)

