$Cccm$ No. 66 $C2/c2/c2/m$ D_{2h}^{20}

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

General position

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

I Maximal *translationengleiche* subgroups

[2] $Cc2m$ (40, $Ama2$)	(1; 3; 6; 8)+	$\mathbf{c},\mathbf{a},\mathbf{b}$	$0,0,1/4$
[2] $C2cm$ (40, $Ama2$)	(1; 4; 6; 7)+	$\mathbf{c},\mathbf{b},-\mathbf{a}$	$0,0,1/4$
[2] $Ccc2$ (37)	(1; 2; 7; 8)+		
[2] $C222$ (21)	(1; 2; 3; 4)+		$0,0,1/4$
[2] $C12/c1$ (15)	(1; 3; 5; 7)+		
[2] $C2/c11$ (15, $C12/c1$)	(1; 4; 5; 8)+	$-\mathbf{b},\mathbf{a},\mathbf{c}$	
[2] $C112/m$ (10, $P112/m$)	(1; 2; 5; 6)+	$1/2(\mathbf{a}-\mathbf{b}),1/2(\mathbf{a}+\mathbf{b}),\mathbf{c}$	

II Maximal *klassengleiche* subgroups

- **Loss of centring translations**

[2] $Pnnm$ (58)	$1; 2; 5; 6; (3; 4; 7; 8)+(\frac{1}{2},\frac{1}{2},0)$		
[2] $Pccn$ (56)	$1; 2; 7; 8; (3; 4; 5; 6)+(\frac{1}{2},\frac{1}{2},0)$		$1/4,1/4,0$
[2] $Pcnm$ (53, $Pmna$)	$1; 3; 6; 8; (2; 4; 5; 7)+(\frac{1}{2},\frac{1}{2},0)$	$\mathbf{c},\mathbf{b},-\mathbf{a}$	$1/4,1/4,0$
[2] $Pncm$ (53, $Pmna$)	$1; 4; 6; 7; (2; 3; 5; 8)+(\frac{1}{2},\frac{1}{2},0)$	$\mathbf{c},\mathbf{a},\mathbf{b}$	$1/4,1/4,0$
[2] $Pncn$ (52, $Pnna$)	$1; 3; 5; 7; (2; 4; 6; 8)+(\frac{1}{2},\frac{1}{2},0)$	$\mathbf{c},\mathbf{a},\mathbf{b}$	
[2] $Pcnn$ (52, $Pnna$)	$1; 4; 5; 8; (2; 3; 6; 7)+(\frac{1}{2},\frac{1}{2},0)$	$\mathbf{c},\mathbf{b},-\mathbf{a}$	
[2] $Pccm$ (49)	1; 2; 3; 4; 5; 6; 7; 8		
[2] $Pnnn$ (48)	$1; 2; 3; 4; (5; 6; 7; 8)+(\frac{1}{2},\frac{1}{2},0)$		$1/4,1/4,0$

- **Enlarged unit cell**

[3] $\mathbf{a}'=3\mathbf{a}$			
$Cccm$ (66)	$\langle 2; 3; 5\rangle$	$3\mathbf{a},\mathbf{b},\mathbf{c}$	
$Cccm$ (66)	$\langle (2; 3; 5)+(2,0,0)\rangle$	$3\mathbf{a},\mathbf{b},\mathbf{c}$	$1,0,0$
$Cccm$ (66)	$\langle (2; 3; 5)+(4,0,0)\rangle$	$3\mathbf{a},\mathbf{b},\mathbf{c}$	$2,0,0$
[3] $\mathbf{b}'=3\mathbf{b}$			
$Cccm$ (66)	$\langle 2; 3; 5\rangle$	$\mathbf{a},3\mathbf{b},\mathbf{c}$	
$Cccm$ (66)	$\langle 3; (2; 5)+(0,2,0)\rangle$	$\mathbf{a},3\mathbf{b},\mathbf{c}$	$0,1,0$
$Cccm$ (66)	$\langle 3; (2; 5)+(0,4,0)\rangle$	$\mathbf{a},3\mathbf{b},\mathbf{c}$	$0,2,0$
[3] $\mathbf{c}'=3\mathbf{c}$			
$Cccm$ (66)	$\langle 2; 5; 3+(0,0,1)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	
$Cccm$ (66)	$\langle 2; 3+(0,0,3); 5+(0,0,2)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,1$
$Cccm$ (66)	$\langle 2; 3+(0,0,5); 5+(0,0,4)\rangle$	$\mathbf{a},\mathbf{b},3\mathbf{c}$	$0,0,2$

- **Series of maximal isomorphic subgroups**

[p] $\mathbf{a}'=p\mathbf{a}$			
$Cccm$ (66)	$\langle (2; 3; 5)+(2u,0,0)\rangle$ prime $p>2$; $0\le u<p$ p conjugate subgroups	$p\mathbf{a},\mathbf{b},\mathbf{c}$	$u,0,0$
[p] $\mathbf{b}'=p\mathbf{b}$			
$Cccm$ (66)	$\langle 3; (2; 5)+(0,2u,0)\rangle$ prime $p>2$; $0\le u<p$ p conjugate subgroups	$\mathbf{a},p\mathbf{b},\mathbf{c}$	$0,u,0$
[p] $\mathbf{c}'=p\mathbf{c}$			
$Cccm$ (66)	$\langle 2; 3+(0,0,\frac{p}{2}-\frac{1}{2}+2u); 5+(0,0,2u)\rangle$ prime $p>2$; $0\le u<p$ p conjugate subgroups	$\mathbf{a},\mathbf{b},p\mathbf{c}$	$0,0,u$

(*Continued on the preceding page*)

- **Series of maximal isomorphic subgroups**

[p] $\mathbf{a}' = p\mathbf{a}$			
Cmmm (65)	$\langle(2;\ 3;\ 5)+(2u,0,0)\rangle$ prime $p>2;\ 0\le u<p$ p conjugate subgroups	$p\mathbf{a},\mathbf{b},\mathbf{c}$	$u,0,0$
[p] $\mathbf{b}' = p\mathbf{b}$			
Cmmm (65)	$\langle 3;\ (2;\ 5)+(0,2u,0)\rangle$ prime $p>2;\ 0\le u<p$ p conjugate subgroups	$\mathbf{a},p\mathbf{b},\mathbf{c}$	$0,u,0$
[p] $\mathbf{c}' = p\mathbf{c}$			
Cmmm (65)	$\langle 2;\ (3;\ 5)+(0,0,2u)\rangle$ prime $p>2;\ 0\le u<p$ p conjugate subgroups	$\mathbf{a},\mathbf{b},p\mathbf{c}$	$0,0,u$

I Minimal *translationengleiche* supergroups

[2] *P*4/*mmm* (123); [2] *P*4/*mbm* (127); [2] $P4_2/mcm$ (132); [2] $P4_2/mnm$ (136); [3] *P*6/*mmm* (191)

II Minimal non-isomorphic *klassengleiche* supergroups

- **Additional centring translations**

[2] *Fmmm* (69)

- **Decreased unit cell**

[2] $\mathbf{a}' = \frac{1}{2}\mathbf{a},\ \mathbf{b}' = \frac{1}{2}\mathbf{b}$ *Pmmm* (47)

(*Continued from the following page*) No. 66 *Cccm*

I Minimal *translationengleiche* supergroups

[2] *P*4/*mcc* (124); [2] *P*4/*mnc* (128); [2] $P4_2/mmc$ (131); [2] $P4_2/mbc$ (135); [3] *P*6/*mcc* (192)

II Minimal non-isomorphic *klassengleiche* supergroups

- **Additional centring translations**

[2] *Fmmm* (69)

- **Decreased unit cell**

[2] $\mathbf{a}' = \frac{1}{2}\mathbf{a},\ \mathbf{b}' = \frac{1}{2}\mathbf{b}$ *Pccm* (49); [2] $\mathbf{c}' = \frac{1}{2}\mathbf{c}$ *Cmmm* (65)