No. 79 $I4$ C_4^5

$$\mathcal{G} = I4$$

Orientation orbit (hkl)	Conventional basis of the scanning group $\mathbf{a}'$ $\mathbf{b}'$ $\mathbf{d}$	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$
(001)	**a** **b** **c**	$I4$	$[s\mathbf{d}, (s+\frac{1}{2})\mathbf{d}]$	$p4$ L49

No. 80 $I4_1$ C_4^6

$$\mathcal{G} = I4_1$$

Orientation orbit (hkl)	Conventional basis of the scanning group $\mathbf{a}'$ $\mathbf{b}'$ $\mathbf{d}$	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$
(001)	**a** **b** **c**	$I4_1$	$[s\mathbf{d}, (s+\frac{1}{4})\mathbf{d},$ $(s+\frac{1}{2})\mathbf{d}, (s+\frac{3}{4})\mathbf{d}]$	$p112$ L03

Geometric class $S_4 - \overline{4}$

No. 81 $P\overline{4}$ S_4^1

$$\mathcal{G} = P\overline{4}$$

Orientation orbit (hkl)	Conventional basis of the scanning group $\mathbf{a}'$ $\mathbf{b}'$ $\mathbf{d}$	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$
(001)	**a** **b** **c**	$P\overline{4}$	$0\mathbf{d}$, $\frac{1}{2}\mathbf{d}$	$p\overline{4}$ L50
			$[s\mathbf{d}, -s\mathbf{d}]$	$p112$ L03

No. 82 $I\overline{4}$ S_4^2

$$\mathcal{G} = I\overline{4}$$

Orientation orbit (hkl)	Conventional basis of the scanning group $\mathbf{a}'$ $\mathbf{b}'$ $\mathbf{d}$	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$
(001)	**a** **b** **c**	$I\overline{4}$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p\overline{4}$ L50
			$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p\overline{4}$ ($\mathbf{a}/2$ or $\mathbf{b}/2$) L50
			$[\pm s\mathbf{d}, (\pm s+\frac{1}{2})\mathbf{d}]$	$p112$ L03

No. 88 $I4_1/a$ C_{4h}^6

$\mathcal{G} = I4_1/a$ origin 2

Orientation orbit (hkl)	Conventional basis of the scanning group $\mathbf{a}'$ $\mathbf{b}'$ $\mathbf{d}$	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(001)	**a** **b** **c**	$I4_1/a$ (origin 2)	$[0\mathbf{d}, \frac{1}{2}\mathbf{d};$	$p112/b$	L07
			$\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p112/a$ $[(\mathbf{a}+\mathbf{b})/4]$	L07
			$[\frac{1}{8}\mathbf{d}, \frac{5}{8}\mathbf{d};$	$p\overline{4}$ $(\mathbf{b}/4)$	L50
			$\frac{3}{8}\mathbf{d}, \frac{7}{8}\mathbf{d}]$	$p\overline{4}$ $(3\mathbf{b}/4)$	L50
			$[\pm s\mathbf{d}, (\pm s+\frac{1}{4})\mathbf{d},$		
			$(\pm s+\frac{1}{2})\mathbf{d}, (\pm s+\frac{3}{4})\mathbf{d}]$	$p112$ $(\mathbf{b}/4)$	L03

Auxiliary tables for Laue class $C_{4h}-4/m$

Centring types *P* and *I*

Orientation orbit (hkl)	Conventional basis of the scanning group $\mathbf{a}'$ $\mathbf{b}'$ $\mathbf{d}$			Auxiliary basis of the scanning group $\widehat{\mathbf{a}}$ $\widehat{\mathbf{b}}$ $\widehat{\mathbf{c}}$		
$(mn0)$	**c**	$n\mathbf{a}-m\mathbf{b}$	$p\mathbf{a}+q\mathbf{b}$	**a**	**b**	**c**
$(\overline{n}m0)$	**c**	$m\mathbf{a}+n\mathbf{b}$	$-q\mathbf{a}+p\mathbf{b}$			

Arithmetic classes $4P$ and $4I$

Serial No.	75	76	77	78	79	80
Group type	C_4^1	C_4^2	C_4^3	C_4^4	C_4^5	C_4^6
Group	$P4$	$P4_1$	$P4_2$	$P4_3$	$I4$	$I4_1$
$(mn0)$ $(\overline{m}n0)$	$P112$	$P112_1$	$P112$	$P112_1$	$I112$	$I112$

Arithmetic classes $\overline{4}P$ and $\overline{4}$

Serial No.	81	82
Group type	S_4^1	S_4^2
Group	$P\overline{4}$	$I\overline{4}$
$(mn0)$ $(\overline{m}n0)$	$P112$	$I112$

Arithmetic class $4/mP$

Serial No.	83	84	85		86	
Group type	C_{4h}^1	C_{4h}^2	C_{4h}^3		C_{4h}^4	
Group	$P4/m$	$P4_2/m$	$P4/n$		$P4_2/n$	
			Origin 1	Origin 2	Origin 1	Origin 2
$(mn0)$ $(\overline{m}n0)$	$P112/m$	$P112/m$	$P112/n$ $(\mathbf{a}+\mathbf{b})/4$	$P112/n$	$P112/n$ $(\mathbf{a}+\mathbf{b}+\mathbf{c})/4$	$P112/n$