

Tetragonal

6. SCANNING TABLES

 Laue class  $C_{4h} - 4/m$ 
**Laue class  $C_{4h} - 4/m$** 
**Geometric class  $C_4 - 4$** 

 No. 75  $P4$ 

$$\mathcal{G} = P4$$

 $C_4^1$ 

Orientation orbit ( <i>hkl</i> )	Conventional basis of the scanning group <b>a'</b> <b>b'</b> <b>d</b>	Scanning group $\mathcal{H}$	Linear orbit <b>sd</b>	Sectional layer group $\mathcal{L}(sd)$	
(001)	<b>a</b> <b>b</b> <b>c</b>	$P4$	<b>sd</b>	$p4$	L49

 No. 76  $P4_1$ 

$$\mathcal{G} = P4_1$$

 $C_4^2$ 

Orientation orbit ( <i>hkl</i> )	Conventional basis of the scanning group <b>a'</b> <b>b'</b> <b>d</b>	Scanning group $\mathcal{H}$	Linear orbit <b>sd</b>	Sectional layer group $\mathcal{L}(sd)$	
(001)	<b>a</b> <b>b</b> <b>c</b>	$P4_1$	$[sd, (s + \frac{1}{4})d, (s + \frac{1}{2})d, (s + \frac{3}{4})d]$	$p1$	L01

 No. 77  $P4_2$ 

$$\mathcal{G} = P4_2$$

 $C_4^3$ 

Orientation orbit ( <i>hkl</i> )	Conventional basis of the scanning group <b>a'</b> <b>b'</b> <b>d</b>	Scanning group $\mathcal{H}$	Linear orbit <b>sd</b>	Sectional layer group $\mathcal{L}(sd)$	
(001)	<b>a</b> <b>b</b> <b>c</b>	$P4_2$	$[sd, (s + \frac{1}{2})d]$	$p112$	L03

 No. 78  $P4_3$ 

$$\mathcal{G} = P4_3$$

 $C_4^4$ 

Orientation orbit ( <i>hkl</i> )	Conventional basis of the scanning group <b>a'</b> <b>b'</b> <b>d</b>	Scanning group $\mathcal{H}$	Linear orbit <b>sd</b>	Sectional layer group $\mathcal{L}(sd)$	
(001)	<b>a</b> <b>b</b> <b>c</b>	$P4_3$	$[sd, (s + \frac{1}{4})d, (s + \frac{1}{2})d, (s + \frac{3}{4})d]$	$p1$	L01

No. 88  $I4_1/a$

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

$C_{4h}^6$

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

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

#### Centring types $P$ and $I$

Orientation orbit ( <i>hkl</i> )	Conventional basis of the scanning group			Auxiliary basis of the scanning group		
	<b>a'</b>	<b>b'</b>	<b>d</b>	$\hat{\mathbf{a}}$	$\hat{\mathbf{b}}$	$\hat{\mathbf{c}}$
( <i>mn</i> 0)	<b>c</b>	$n\mathbf{a} - m\mathbf{b}$	$p\mathbf{a} + q\mathbf{b}$	<b>a</b>	<b>b</b>	<b>c</b>
( $\bar{m}$ n0)	<b>c</b>	$m\mathbf{a} + n\mathbf{b}$	$-q\mathbf{a} + p\mathbf{b}$			

#### 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	$P4$	$P4_1$	$P4_2$	$P4_3$	$I4$	$I4_1$
( <i>mn</i> 0)	$P112$	$P112_1$	$P112$	$P112_1$	$I112$	$I112$
( $\bar{m}$ n0)						

#### Arithmetic classes $\bar{4}P$ and $\bar{4}$

Serial No.	81	82
Group type	$S_4^1$	$S_4^2$
Group	$P\bar{4}$	$I\bar{4}$
( <i>mn</i> 0)	$P112$	$I112$
( $\bar{m}$ n0)		

#### Arithmetic class $4/mP$

Serial No.	83	84	85		86	
			Origin 1	Origin 2	Origin 1	Origin 2
Group type	$C_{4h}^1$	$C_{4h}^2$	$C_{4h}^3$		$C_{4h}^4$	
Group	$P4/m$	$P4_2/m$	$P4/n$		$P4_2/n$	
( <i>mn</i> 0)	$P112/m$	$P112/m$	$P112/n$	$P112/n$	$P112/n$	$P112/n$
( $\bar{m}$ n0)			$(\mathbf{a} + \mathbf{b})/4$		$(\mathbf{a} + \mathbf{b} + \mathbf{c})/4$	