Laue class $O_h - m\bar{3}m$ 6. SCANNING TABLES   Cubic

No. 214 $I4_132$ O^8

$$\mathcal{G} = I4_132$$

Orientation orbit (hkl)	Conventional basis of the scanning group a'	b'	d	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(001)	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$	$I4_122$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d};$	$p2_122\ (\mathbf{b}'/4)$	L20
(100)	$\mathbf{b}$	$\mathbf{c}$	$\mathbf{a}$	$(\mathbf{b}'/4 + \mathbf{d}/8)$	$\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p22_12\ (\mathbf{b}'/4)$	L20
(010)	$\mathbf{c}$	$\mathbf{a}$	$\mathbf{b}$		$[\frac{1}{8}\mathbf{d}, \frac{5}{8}\mathbf{d};$	$\widehat{c}222\ (\mathbf{b}'/4)$	L22
					$\frac{3}{8}\mathbf{d}, \frac{7}{8}\mathbf{d}]$	$\widehat{c}222\ (3\mathbf{b}'/4)$	L22
					$[\pm s\mathbf{d}, (\pm s + \frac{1}{4})\mathbf{d},$		
					$(\pm s + \frac{1}{2})\mathbf{d}, (\pm s + \frac{3}{4})\mathbf{d}]$	$p112\ (\mathbf{b}'/4)$	L03
(110)	$\mathbf{c}$	$\mathbf{a} - \mathbf{b}$	$\mathbf{a} + \mathbf{b}$	$F222$	$[\frac{1}{8}\mathbf{d}, \frac{5}{8}\mathbf{d}]$	$c222\ [(\mathbf{a}' + 3\mathbf{b}')/8]$	L22
(011)	$\mathbf{a}$	$\mathbf{b} - \mathbf{c}$	$\mathbf{b} + \mathbf{c}$	$[(\mathbf{a}'+3\mathbf{b}'+\mathbf{d})/8]$	$[\frac{3}{8}\mathbf{d}, \frac{7}{8}\mathbf{d}]$	$c222\ [(3\mathbf{a}' + \mathbf{b}')/8]$	L22
(101)	$\mathbf{b}$	$\mathbf{c} - \mathbf{a}$	$\mathbf{c} + \mathbf{a}$		$[(\pm s + \frac{1}{8})\mathbf{d}, (\pm s + \frac{5}{8})\mathbf{d}]$	$\widehat{p}112\ [(\mathbf{a}' + 3\mathbf{b}')/8]$	L03
(1$\bar{1}$0)	$\mathbf{c}$	$\mathbf{a} + \mathbf{b}$	$\mathbf{b} - \mathbf{a}$	$F222$	$[\frac{1}{8}\mathbf{d}, \frac{5}{8}\mathbf{d}]$	$c222\ [(\mathbf{a}' + \mathbf{b}')/8]$	L22
(01$\bar{1}$)	$\mathbf{a}$	$\mathbf{b} + \mathbf{c}$	$\mathbf{c} - \mathbf{b}$	$[(\mathbf{a}' + \mathbf{b}' + \mathbf{d})/8]$	$[\frac{3}{8}\mathbf{d}, \frac{7}{8}\mathbf{d}]$	$c222\ [3(\mathbf{a}' + \mathbf{b}')/8]$	L22
($\bar{1}$01)	$\mathbf{b}$	$\mathbf{c} + \mathbf{a}$	$\mathbf{a} - \mathbf{c}$		$[(\pm s + \frac{1}{8})\mathbf{d}, (\pm s + \frac{5}{8})\mathbf{d}]$	$\widehat{p}112\ [(\mathbf{a}' + \mathbf{b}')/8]$	L03
(111)	$\mathbf{a} - \mathbf{c}$	$\mathbf{b} - \mathbf{a}$	$\tau/2$	With respect to origin at P			
($\bar{1}$11)	$-\mathbf{a} - \mathbf{c}$	$\mathbf{a} - \mathbf{b}$	$\tau_3/2$	With respect to origin at $P + \mathbf{b}/2$			
(1$\bar{1}$1)	$\mathbf{a} + \mathbf{c}$	$-\mathbf{a} - \mathbf{b}$	$\tau_1/2$	With respect to origin at $P + \mathbf{c}/2$			
($\bar{1}$1$\bar{1}$)	$\mathbf{c} - \mathbf{a}$	$\mathbf{a} + \mathbf{b}$	$\tau_2/2$	With respect to origin at $P + \mathbf{a}/2$			
				$R32$	$[\frac{1}{8}\mathbf{d},\ \ [\frac{5}{8}\mathbf{d},$	$p321$	L68
				$(\mathbf{d}/8)$	$\frac{11}{24}\mathbf{d},\ \|\ \frac{23}{24}\mathbf{d},$	$p321\ [(2\mathbf{a}' + \mathbf{b}')/3]$	L68
					$\frac{19}{24}\mathbf{d}]\ \ \ \frac{7}{24}\mathbf{d}]$	$p321\ [(\mathbf{a}' + 2\mathbf{b}')/3]$	L68
					$[(\pm s + \frac{1}{8})\mathbf{d}, (\pm s + \frac{11}{24})\mathbf{d},$		
					$(\pm s + \frac{19}{24})\mathbf{d}]$	$p3$	L65

Geometric class $T_d - \bar{4}3m$

No. 215 $P\bar{4}3m$ T_d^1

$$\mathcal{G} = P\bar{4}3m$$

Orientation orbit (hkl)	Conventional basis of the scanning group a'	b'	d	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(001)	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$	$P\bar{4}2m$	$0\mathbf{d}, \frac{1}{2}\mathbf{d}$	$p\bar{4}2m$	L57
(100)	$\mathbf{b}$	$\mathbf{c}$	$\mathbf{a}$		$[s\mathbf{d}, -s\mathbf{d}]$	$\widehat{c}mm2$	L26
(010)	$\mathbf{c}$	$\mathbf{a}$	$\mathbf{b}$				
(110)	$\mathbf{c}$	$\mathbf{a} - \mathbf{b}$	$\mathbf{a} + \mathbf{b}$	$A2mm$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p2mm$	L27
(1$\bar{1}$0)	$\mathbf{c}$	$\mathbf{a} + \mathbf{b}$	$\mathbf{b} - \mathbf{a}$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p2mb\ (\mathbf{b}'/4)$	L31
(011)	$\mathbf{a}$	$\mathbf{b} - \mathbf{c}$	$\mathbf{b} + \mathbf{c}$		$[\pm s\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d}]$	$p1m1$	L11
(01$\bar{1}$)	$\mathbf{a}$	$\mathbf{b} + \mathbf{c}$	$\mathbf{c} - \mathbf{b}$				
(101)	$\mathbf{b}$	$\mathbf{c} - \mathbf{a}$	$\mathbf{c} + \mathbf{a}$				
($\bar{1}$01)	$\mathbf{b}$	$\mathbf{c} + \mathbf{a}$	$\mathbf{a} - \mathbf{c}$				
(111)	$\mathbf{a} - \mathbf{b}$	$\mathbf{b} - \mathbf{c}$	τ	$R3m$	$[s\mathbf{d}, (s + \frac{1}{3})\mathbf{d}, (s + \frac{2}{3})\mathbf{d}]$	$p3m1$	L69
($\bar{1}$11)	$\mathbf{b} - \mathbf{a}$	$-\mathbf{b} - \mathbf{c}$	τ_3				
(1$\bar{1}$1)	$\mathbf{a} + \mathbf{b}$	$\mathbf{c} - \mathbf{b}$	τ_1				
($\bar{1}$1$\bar{1}$)	$-\mathbf{a} - \mathbf{b}$	$\mathbf{b} + \mathbf{c}$	τ_2				

Centring type I

Orientation orbit (hkl)	Conventional basis of the scanning group			Auxiliary basis of the scanning group		
	$\mathbf{a}'$	$\mathbf{b}'$	$\mathbf{d}$	$\widehat{\mathbf{a}}$	$\widehat{\mathbf{b}}$	$\widehat{\mathbf{c}}$
$(mn0)$	$\mathbf{c}$	$n\mathbf{a} - m\mathbf{b}$	$p\mathbf{a} + q\mathbf{b}$	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$
$(\overline{m}n0)$	$\mathbf{c}$	$n\mathbf{a} + m\mathbf{b}$	$-p\mathbf{a} + q\mathbf{b}$			
$(nm0)$	$\mathbf{c}$	$m\mathbf{a} - n\mathbf{b}$	$q\mathbf{a} + p\mathbf{b}$			
$(\overline{n}m0)$	$\mathbf{c}$	$m\mathbf{a} + n\mathbf{b}$	$-q\mathbf{a} + p\mathbf{b}$			
$(0mn)$	$\mathbf{a}$	$n\mathbf{b} - m\mathbf{c}$	$p\mathbf{b} + q\mathbf{c}$	$\mathbf{b}$	$\mathbf{c}$	$\mathbf{a}$
$(0\overline{m}n)$	$\mathbf{a}$	$n\mathbf{b} + m\mathbf{c}$	$-p\mathbf{b} + q\mathbf{c}$			
$(0nm)$	$\mathbf{a}$	$m\mathbf{b} - n\mathbf{c}$	$q\mathbf{b} + p\mathbf{c}$			
$(0\overline{n}m)$	$\mathbf{a}$	$m\mathbf{b} + n\mathbf{c}$	$-q\mathbf{b} + p\mathbf{c}$			
$(n0m)$	$\mathbf{b}$	$n\mathbf{c} - m\mathbf{a}$	$p\mathbf{c} + q\mathbf{a}$	$\mathbf{c}$	$\mathbf{a}$	$\mathbf{b}$
$(n0\overline{m})$	$\mathbf{b}$	$n\mathbf{c} + m\mathbf{a}$	$-p\mathbf{c} + q\mathbf{a}$			
$(m0n)$	$\mathbf{b}$	$m\mathbf{c} - n\mathbf{a}$	$q\mathbf{c} + p\mathbf{a}$			
$(m0\overline{n})$	$\mathbf{b}$	$m\mathbf{c} + n\mathbf{a}$	$-q\mathbf{c} + p\mathbf{a}$			
(hhl)	$\mathbf{a} - \mathbf{b}$	$n\widehat{\mathbf{a}} - m\mathbf{c}$	$p\widehat{\mathbf{a}} + q\mathbf{c}$	$(\mathbf{a} + \mathbf{b} + \mathbf{c})/2$	$\mathbf{c}$	$\mathbf{a} - \mathbf{b}$
$(\overline{h}hl)$	$\mathbf{a} - \mathbf{b}$	$n\widehat{\mathbf{a}} + m\mathbf{c}$	$-p\widehat{\mathbf{a}} + q\mathbf{c}$			
$(h\overline{h}l)$	$\mathbf{a} + \mathbf{b}$	$n\widehat{\mathbf{a}} - m\mathbf{c}$	$p\widehat{\mathbf{a}} + q\mathbf{c}$	$(\mathbf{b} - \mathbf{a} + \mathbf{c})/2$	$\mathbf{c}$	$\mathbf{a} + \mathbf{b}$
$(\overline{h}hl)$	$\mathbf{a} + \mathbf{b}$	$n\widehat{\mathbf{a}} + m\mathbf{c}$	$-p\widehat{\mathbf{a}} + q\mathbf{c}$			
(lhh)	$\mathbf{b} - \mathbf{c}$	$n\widehat{\mathbf{a}} - m\mathbf{a}$	$p\widehat{\mathbf{a}} + q\mathbf{a}$	$(\mathbf{b} + \mathbf{c} + \mathbf{a})/2$	$\mathbf{a}$	$\mathbf{b} - \mathbf{c}$
$(l\overline{h}h)$	$\mathbf{b} - \mathbf{c}$	$n\widehat{\mathbf{a}} + m\mathbf{a}$	$-p\widehat{\mathbf{a}} + q\mathbf{a}$			
$(lh\overline{h})$	$\mathbf{b} + \mathbf{c}$	$n\widehat{\mathbf{a}} - m\mathbf{a}$	$p\widehat{\mathbf{a}} + q\mathbf{a}$	$(\mathbf{c} - \mathbf{b} + \mathbf{a})/2$	$\mathbf{a}$	$\mathbf{b} + \mathbf{c}$
$(\overline{l}hh)$	$\mathbf{b} + \mathbf{c}$	$n\widehat{\mathbf{a}} + m\mathbf{a}$	$-p\widehat{\mathbf{a}} + q\mathbf{a}$			
(hlh)	$\mathbf{c} - \mathbf{a}$	$n\widehat{\mathbf{a}} - m\mathbf{b}$	$p\widehat{\mathbf{a}} + q\mathbf{b}$	$(\mathbf{c} + \mathbf{a} + \mathbf{b})/2$	$\mathbf{b}$	$\mathbf{c} - \mathbf{a}$
$(hl\overline{h})$	$\mathbf{c} - \mathbf{a}$	$n\widehat{\mathbf{a}} + m\mathbf{b}$	$-p\widehat{\mathbf{a}} + q\mathbf{b}$			
$(\overline{h}lh)$	$\mathbf{c} + \mathbf{a}$	$n\widehat{\mathbf{a}} - m\mathbf{b}$	$p\widehat{\mathbf{a}} + q\mathbf{b}$	$(\mathbf{a} - \mathbf{c} + \mathbf{b})/2$	$\mathbf{b}$	$\mathbf{c} + \mathbf{a}$
$(hl\overline{h})$	$\mathbf{c} + \mathbf{a}$	$n\widehat{\mathbf{a}} + m\mathbf{b}$	$-p\widehat{\mathbf{a}} + q\mathbf{b}$			
l odd $\Rightarrow n = 2l,\ m = 2h + l$; l even $\Rightarrow n = l,\ m = h + l/2$						

Arithmetic classes 432I, $\overline{4}3mI$ and $m\overline{3}mI$

Serial No.	211	214	217	220	229	230
Group type	O^5	O^8	T_d^3	T_d^6	O_h^9	O_h^{10}
Group	$I432$	$I4_132$	$I\overline{4}3m$	$I\overline{4}3d$	$Im\overline{3}m$	$Ia\overline{3}d$
$(mn0)$	$I112$	$I112$	$I112$	$I112$	$I112/m$	$I112/b$
$(\overline{m}n0)$		$(\mathbf{b}/4)$		$(\mathbf{b}/4)$		
$(nm0)$						
$(\overline{n}m0)$						
$(0mn)$		$I112$		$I112$		
$(0\overline{m}n)$		$(\mathbf{c}/4)$		$(\mathbf{c}/4)$		
$(0nm)$						
$(0\overline{n}m)$						
$(n0m)$		$I112$		$I112$		
$(n0\overline{m})$		$(\mathbf{a}/4)$		$(\mathbf{a}/4)$		
$(m0n)$						
$(m0\overline{n})$						
(hhl)	$B112$	$B112$	$B11m$	$B11b$	$B112/m$	$B112/b$
$(\overline{h}hl)$		$(\mathbf{a}+\mathbf{c})/8$				
$(h\overline{h}l)$		$B112$				
$(\overline{h}hl)$		$3(\mathbf{a}+\mathbf{c})/8$				
(lhh)		$B112$				
$(\overline{l}h\overline{h})$		$(\mathbf{b}+\mathbf{a})/8$				
$(lh\overline{h})$		$B112$				
$(\overline{l}hh)$		$3(\mathbf{b}+\mathbf{a})/8$				
(hlh)		$B112$				
$(\overline{h}l\overline{h})$		$(\mathbf{c}+\mathbf{b})/8$				
$(\overline{h}lh)$		$B112$				
$(hl\overline{h})$		$3(\mathbf{c}+\mathbf{b})/8$				