TABLES:
SCANNING OF TWO-DIMENSIONAL SPACE GROUPS

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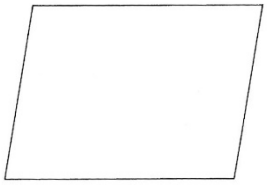
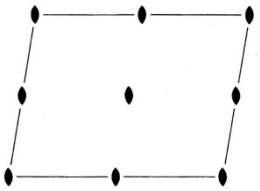
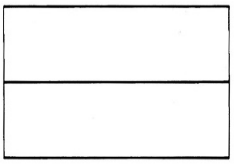
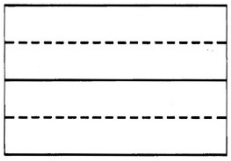
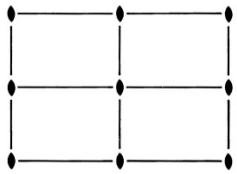
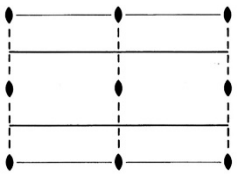
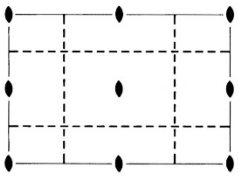
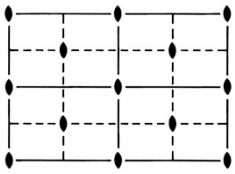
Abstract

Tables of the scanning of two-dimensional space groups are presented to determine the frieze group symmetry of lines that transect two-dimensional crystals.

Two-Dimensional Space Group		Direction	$\mathbf{a}_F$	$\mathbf{d}$	Linear Orbit s$\mathbf{d}$	Frieze Group	
1) *p*1							
2) *p*2		[n,m]	n$\mathbf{a}$ + m$\mathbf{b}$	p$\mathbf{a}$ – q$\mathbf{b}$	0$\mathbf{d}$, ½$\mathbf{d}$	211	F2
					[s$\mathbf{d}$, -s$\mathbf{d}$]	1	F1
3) *p*m		[0,1]	$\mathbf{b}$	$\mathbf{a}$	0$\mathbf{d}$, ½$\mathbf{d}$	11m	F4
					[s$\mathbf{d}$, -s$\mathbf{d}$]	1	F1
		[1,0]	$\mathbf{a}$	$\mathbf{b}$	s$\mathbf{d}$	1m1	F3
4) *p*g		[0,1]	$\mathbf{b}$	$\mathbf{a}$	0$\mathbf{d}$, ½$\mathbf{d}$	11g	F5
					[s$\mathbf{d}$, -s$\mathbf{d}$]	1	F1
5) *c*m		[0,1]	$\mathbf{b}$	$\mathbf{a}$	[0$\mathbf{d}$, ½$\mathbf{d}$]	11m	F4
					[¼$\mathbf{d}$, ¾$\mathbf{d}$]	11g	F5
					[±s$\mathbf{d}$, (±s+½)$\mathbf{d}$]	1	F1

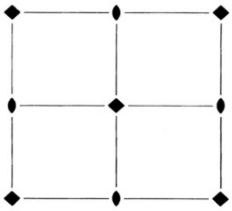
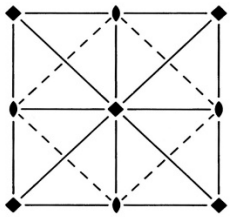
	[1,0]	**a**	**b**	[s**d**, (s+½)**d**]	1m1	F3
6) *p*2mm 	[1,0]	**a**	**b**	0**d**, ½**d**	2mm	F6
				[s**d**, -s**d**]	1m1	F3
	[0,1]	**b**	**a**	0**d**, ½**d**	2mm	F6
				[s**d**, -s**d**]	1m1	F3
	[n,m]	n**a** + m**b**	p**a** - q**b**	0**d**, ½**d**	211	F2
				[s**d**, -s**d**]	1	F1
7) *p*2mg 	[1,0]	**a**	**b**	0**d**, ½**d**	2mg	F7
				[s**d**, -s**d**]	1m1($\mathbf{a}_F$/4)	F3
	[0,1]	**b**	**a**	[0**d**, ½**d**]	211	F2
				[¼**d**, ¾**d**]	11m	F4
				[±s**d**, (±s+½)**d**]	1	F1
	[n,m]	n**a** + m**b**	p**a** - q**b**	0**d**, ½**d**	211	F2
				[s**d**, -s**d**]	1	F1

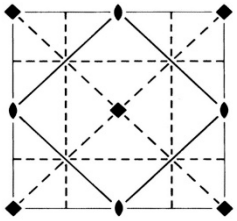
8) *p*2gg		[1,0]	**a**	**b**	[0**d**, ½**d**]	211	F2
					[¼**d**, ¾**d**]	11g	F5
					[±s**d**, (±s+½)**d**]	1	F1
		[0,1]	**b**	**a**	[0**d**, ½**d**]	211	F2
					[¼**d**, ¾**d**]	11g	F5
					[±s**d**, (±s+½)**d**]	1	F1
		[n,m]	n**a** + m**b**	p**a** - q**b**	0**d**, ½**d**	211	F2
					[s**d**, -s**d**]	1	F1
9) *c*2mm		[1,0]	**a**	**b**	[0**d**, ½**d**]	2mm	F6
					[¼**d**, ¾**d**]	2mg(**a**$_F$/4)	F7
					[±s**d**, (±s+½)**d**]	1m1	F3
		[0,1]	**b**	**a**	[0**d**, ½**d**]	2mm	F6
					[¼**d**, ¾**d**]	2mg(**a**$_F$/4)	F7
					[±s**d**, (±s+½)**d**]	1m1	F3
		[h,k]	n$\hat{\mathbf{a}}$ + m$\hat{\mathbf{b}}$	p$\hat{\mathbf{a}}$ - q$\hat{\mathbf{b}}$	0**d**, ½**d**	211	F2
					[s**d**, -s**d**]	1	F1

$\hat{\mathbf{a}}$=(**a**+**b**)/2 $\hat{\mathbf{b}}$=(**a**-**b**)/2

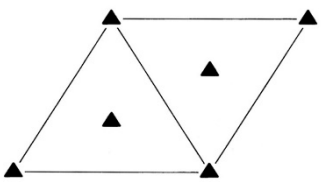
If h,k even/odd or odd/even the n=h+k and m=h-k.

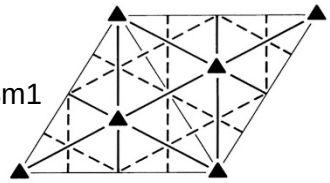
If h,k both odd, then n=(h+k)/2 and m=(h-k)/2 .

10) *p*4		[n,m]	n**a** + m**b**	p**a** - q**b**	0**d**, ½**d**	⫽211	F2
					[s**d**, -s**d**]	⫽1	F1
11) *p*4mm		[1,0]	**a**	**b**	0**d**, ½**d**	⫽2mm	F6
					[s**d**, -s**d**]	⫽1m1	F3
		[0,1]	**b**	**a**	0**d**, ½**d**	⫽2mm	F6
					[s**d**, -s**d**]	⫽1m1	F3
		[1,1]	**a**+**b**	**a**-**b**	[0**d**, ½**d**]	⫽2mm	F6
					[¼**d**, ¾**d**]	⫽2mg(**a**$_F$/4)	F7
					[±s**d**, (±s+½)**d**]	⫽1m1	F3
		[1,-1]	**a**-**b**	**a**+**b**	[0**d**, ½**d**]	⫽2mm	F6
					[¼**d**, ¾**d**]	⫽2mg(**a**$_F$/4)	F7
					[±s**d**, (±s+½)**d**]	⫽1m1	F3
		[n,m]	n**a** + m**b**	p**a** - q**b**	0**d**, ½**d**	⫽211	F2
					[s**d**, -s**d**]	⫽1	F1

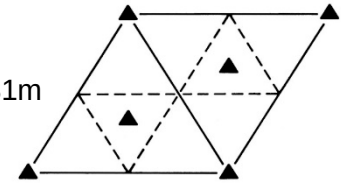
12) *p*4gm 

[1,0]	**a**	**b**	[0**d**, ½**d**]	211	F2
			[¼**d**, ¾**d**]	11g	F5
			[±s**d**, (±s+½)**d**]	1	F1
[1,0]	**b**	**a**	[0**d**, ½**d**]	211	F2
			[¼**d**, ¾**d**]	11g	F5
			[±s**d**, (±s+½)**d**]	1	F1
[1,1]	**a**+**b**	**a**-**b**	[0**d**, ½**d**]	2mg	F7
			[¼**d**, ¾**d**]	2mm(**a**$_F$/4)	F6
			[±s**d**, (±s+½)**d**]	1m1(**a**$_F$/4)	F3
[1,-1]	**a**-**b**	**a**+**b**	[0**d**, ½**d**]	2mg	F7
			[¼**d**, ¾**d**]	2mm(**a**$_F$/4)	F6
			[±s**d**, (±s+½)**d**]	1m1(**a**$_F$/4)	F3
[n,m]	n**a** + m**b**	p**a** - q**b**	0**d**, ½**d**	211	F2
			[s**d**, -s**d**]	1	F1

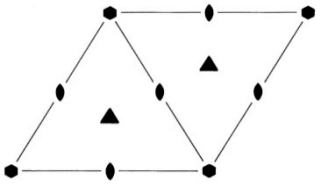
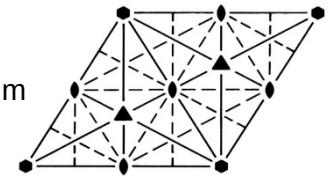
13) *p*3 

14) *p*3m1 

[1,0]	**a**	**a**+2**b**	[s**d**, (s+½)**d**]	1m1	F3
[0,1]	**b**	2**a**+**b**	[s**d**, (s+½)**d**]	1m1	F3
[1,1]	**a**+**b**	**a**-**b**	[s**d**, (s+½)**d**]	1m1	F3
[2,1]	2**a**+**b**	**b**	[0**d**, ½**d**]	11m	F4
			[¼**d**, ¾**d**]	11g	F5
			[±s**d**, (±s+½)**d**]	1	F1
[1,2]	**a**+2**b**	**a**	[0**d**, ½**d**]	11m	F4
			[¼**d**, ¾**d**]	11g	F5
			[±s**d**, (±s+½)**d**]	1	F1
[1,-1]	**a**-**b**	**a**+**b**	[0**d**, ½**d**]	11m	F4
			[¼**d**, ¾**d**]	11g	F5
			[±s**d**, (±s+½)**d**]	1	F1

15) *p*31m 

[2,1]	2**a**+**b**	**b**	[s**d**, (s+½)**d**]	1m1	F3
[1,2]	**a**+2**b**	**a**	[s**d**, (s+½)**d**]	1m1	F3
[1,-1]	**a**-**b**	**a**+**b**	[s**d**, (s+½)**d**]	1m1	F3

	[1,0]	**a**	**a**+2**b**	[0**d**, ½**d**]	11m	F4
				[¼**d**, ¾**d**]	11g	F5
				[±s**d**, (±s+½)**d**]	1	F1
	[0,1]	**b**	2**a**+**b**	[0**d**, ½**d**]	11m	F4
				[¼**d**, ¾**d**]	11g	F5
				[±s**d**, (±s+½)**d**]	1	F1
	[1,1]	**a**+**b**	**a**-**b**	[0**d**, ½**d**]	11m	F4
				[¼**d**, ¾**d**]	11g	F5
				[±s**d**, (±s+½)**d**]	1	F1
16) *p*6 	[n,m]	n**a** + m**b**	p**a** - q**b**	0**d**, ½**d**	211	F2
				[s**d**, -s**d**]	1	F1
17) *p*6mm 	[1,0]	**a**	**a**+2**b**	[0**d**, ½**d**]	2mm	F6
				[¼**d**, ¾**d**]	2mg(**a**$_F$/4)	F7
				[±s**d**, (±s+½)**d**]	1m1	F3
	[2,1]	2**a**+**b**	**b**	[0**d**, ½**d**]	2mm	F6
				[¼**d**, ¾**d**]	2mg(**a**$_F$/4)	F7
				[±s**d**, (±s+½)**d**]	1m1	F3

[1,1]	**a**+**b**	**a**-**b**	[0**d**, ½**d**]	2mm	F6
			[¼**d**, ¾**d**]	2mg(**a**$_F$/4)	F7
			[±s**d**, (±s+½)**d**]	1m1	F3
[1,2]	**a**+2**b**	**a**	[0**d**, ½**d**]	2mm	F6
			[¼**d**, ¾**d**]	2mg(**a**$_F$/4)	F7
			[±s**d**, (±s+½)**d**]	1m1	F3
[0,1]	**b**	2**a**+**b**	[0**d**, ½**d**]	2mm	F6
			[¼**d**, ¾**d**]	2mg(**a**$_F$/4)	F7
			[±s**d**, (±s+½)**d**]	1m1	F3
[1,-1]	**a**-**b**	**a**+**b**	[0**d**, ½**d**]	2mm	F6
			[¼**d**, ¾**d**]	2mg(**a**$_F$/4)	F7
			[±s**d**, (±s+½)**d**]	1m1	F3
[n,m]	n**a** + m**b**	p**a** - q**b**	0**d**, ½**d**	211	F2
			[s**d**, -s**d**]	1	F1