

1. GENERAL RELATIONSHIPS AND TECHNIQUES

Appendix 1.4.4.

Crystallographic space groups in reciprocal space

Table A1.4.4.1. Crystallographic space groups in reciprocal space

The table entries are described in detail in Section 1.4.4.1. The general format of an entry is

$$(n) \mathbf{h}^T \mathbf{P}_n : -\mathbf{h}^T \mathbf{t}_n$$

or

$$(n) \mathbf{h}^T \mathbf{P}_n : ,$$

according as the phase-shift part of the entry is nonzero or zero modulo 2π , respectively.

Notes:

(1) For centrosymmetric space groups with the centre located at the unit-cell origin only those entries are given which correspond to symmetry operations not related by inversion. If the origin in such space groups is chosen elsewhere, all the entries corresponding to the operations of the point group are presented.

(2) For trigonal and hexagonal space groups referred to hexagonal axes the Miller–Bravais indices hkl are employed, and for the rhombohedral space groups referred to rhombohedral axes the indices are denoted by hkl (cf. *IT I*, 1952).

<table border="1"> <thead> <tr> <th>Point group: 1</th> <th>Triclinic</th> <th>Laue group: $\bar{1}$</th> </tr> </thead> <tbody> <tr> <td>$P1$</td> <td>No. 1</td> <td>(1)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td></td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Point group: $\bar{1}$</th> <th>Triclinic</th> <th>Laue group: $\bar{1}$</th> </tr> </thead> <tbody> <tr> <td>$P\bar{1}$</td> <td>No. 2</td> <td>(2)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td></td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>Point group: 2</th> <th>Monoclinic</th> <th>Laue group: $2/m$</th> </tr> </thead> <tbody> <tr> <td>$P2$</td> <td>$P121$</td> <td>Unique axis b No. 3 (3)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$:</td> </tr> <tr> <td>$P2$</td> <td>$P112$</td> <td>Unique axis c No. 3 (4)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$:</td> </tr> <tr> <td>$P2_1$</td> <td>$P12_11$</td> <td>Unique axis b No. 4 (5)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$: $-010/2$</td> </tr> <tr> <td>$P2_1$</td> <td>$P112_1$</td> <td>Unique axis c No. 4 (6)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$: $-001/2$</td> </tr> <tr> <td>$C2$</td> <td>$C121$</td> <td>Unique axis b No. 5 (7)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$:</td> </tr> <tr> <td>$C2$</td> <td>$A121$</td> <td>Unique axis b No. 5 (8)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$:</td> </tr> <tr> <td>$C2$</td> <td>$I121$</td> <td>Unique axis b No. 5 (9)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$:</td> </tr> <tr> <td>$C2$</td> <td>$A112$</td> <td>Unique axis c No. 5 (10)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$:</td> </tr> <tr> <td>$C2$</td> <td>$B112$</td> <td>Unique axis c No. 5 (11)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) 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5 (10)	(1) hkl :		(2) $\bar{h}\bar{k}\bar{l}$:	$C2$	$B112$	Unique axis c No. 5 (11)	(1) hkl :		(2) $\bar{h}\bar{k}\bar{l}$:	$C2$	$I112$	Unique axis c No. 5 (12)	(1) hkl :		(2) $\bar{h}\bar{k}\bar{l}$:	<table border="1"> <thead> <tr> <th>Point group: m</th> <th>Monoclinic</th> <th>Laue group: $2/m$</th> </tr> </thead> <tbody> <tr> <td>Pm</td> <td>$P1m1$</td> <td>Unique axis b No. 6 (13)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$:</td> </tr> <tr> <td>Pm</td> <td>$P11m$</td> <td>Unique axis c No. 6 (14)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$:</td> </tr> <tr> <td>Pc</td> <td>$P1c1$</td> <td>Unique axis b No. 7 (15)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$: $-001/2$</td> </tr> <tr> <td>Pc</td> <td>$P1n1$</td> <td>Unique axis b No. 7 (16)</td> </tr> <tr> <td>(1) hkl:</td> <td></td> <td>(2) $\bar{h}\bar{k}\bar{l}$: $-101/2$</td> </tr> <tr> <td>Pc</td> <td>$P1a1$</td> <td>Unique axis b No. 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1.4. SYMMETRY IN RECIPROCAL SPACE

Table A1.4.4.1. Crystallographic space groups in reciprocal space (cont.)

<i>Cc</i>	<i>C1c1</i>	Unique axis <i>b</i>	No. 9 (27)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-001/2$
<i>Cc</i>	<i>A1n1</i>	Unique axis <i>b</i>	No. 9 (28)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-101/2$
<i>Cc</i>	<i>I1a1</i>	Unique axis <i>b</i>	No. 9 (29)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-100/2$
<i>Cc</i>	<i>A11a</i>	Unique axis <i>c</i>	No. 9 (30)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-100/2$
<i>Cc</i>	<i>B11n</i>	Unique axis <i>c</i>	No. 9 (31)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-110/2$
<i>Cc</i>	<i>I11b</i>	Unique axis <i>c</i>	No. 9 (32)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-010/2$

Point group: 2/m Monoclinic Laue group: 2/m			
<i>P2/m</i>	<i>P12/m1</i>	Unique axis <i>b</i>	No. 10 (33)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	
<i>P2/m</i>	<i>P112/m</i>	Unique axis <i>c</i>	No. 10 (34)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	
<i>P2₁/m</i>	<i>P12₁/m1</i>	Unique axis <i>b</i>	No. 11 (35)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-010/2$
<i>P2₁/m</i>	<i>P112₁/m</i>	Unique axis <i>c</i>	No. 11 (36)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-001/2$
<i>C2/m</i>	<i>C12/m1</i>	Unique axis <i>b</i>	No. 12 (37)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	
<i>C2/m</i>	<i>A12/m1</i>	Unique axis <i>b</i>	No. 12 (38)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	
<i>C2/m</i>	<i>I12/m1</i>	Unique axis <i>b</i>	No. 12 (39)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	
<i>C2/m</i>	<i>A112/m</i>	Unique axis <i>c</i>	No. 12 (40)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	
<i>C2/m</i>	<i>B112/m</i>	Unique axis <i>c</i>	No. 12 (41)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	
<i>C2/m</i>	<i>I112/m</i>	Unique axis <i>c</i>	No. 12 (42)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	
<i>P2/c</i>	<i>P12/c1</i>	Unique axis <i>b</i>	No. 13 (43)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-001/2$
<i>P2/c</i>	<i>P12/n1</i>	Unique axis <i>b</i>	No. 13 (44)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-101/2$
<i>P2/c</i>	<i>P12/a1</i>	Unique axis <i>b</i>	No. 13 (45)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-100/2$

<i>P2/c</i>	<i>P112/a</i>	Unique axis <i>c</i>	No. 13 (46)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-100/2$
<i>P2/c</i>	<i>P112/n</i>	Unique axis <i>c</i>	No. 13 (47)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-110/2$
<i>P2/c</i>	<i>P112/b</i>	Unique axis <i>c</i>	No. 13 (48)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-010/2$
<i>P2₁/c</i>	<i>P12₁/c1</i>	Unique axis <i>b</i>	No. 14 (49)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-011/2$
<i>P2₁/c</i>	<i>P12₁/n1</i>	Unique axis <i>b</i>	No. 14 (50)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-111/2$
<i>P2₁/c</i>	<i>P12₁/a1</i>	Unique axis <i>b</i>	No. 14 (51)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-110/2$
<i>P2₁/c</i>	<i>P112₁/a</i>	Unique axis <i>c</i>	No. 14 (52)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-101/2$
<i>P2₁/c</i>	<i>P112₁/n</i>	Unique axis <i>c</i>	No. 14 (53)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-111/2$
<i>P2₁/c</i>	<i>P112₁/b</i>	Unique axis <i>c</i>	No. 14 (54)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-011/2$
<i>C2/c</i>	<i>C12/c1</i>	Unique axis <i>b</i>	No. 15 (55)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-001/2$
<i>C2/c</i>	<i>A12/n1</i>	Unique axis <i>b</i>	No. 15 (56)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-101/2$
<i>C2/c</i>	<i>I12/a1</i>	Unique axis <i>b</i>	No. 15 (57)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-100/2$
<i>C2/c</i>	<i>A112/a</i>	Unique axis <i>c</i>	No. 15 (58)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-100/2$
<i>C2/c</i>	<i>B112/n</i>	Unique axis <i>c</i>	No. 15 (59)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-110/2$
<i>C2/c</i>	<i>I112/b</i>	Unique axis <i>c</i>	No. 15 (60)
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	$-010/2$

Point group: 222 Orthorhombic Laue group: mmm				
<i>P222</i>	No. 16 (61)			
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}\bar{k}l$:	(4) $\bar{h}\bar{k}l$:
<i>P222₁</i>	No. 17 (62)			
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}\bar{k}l$:	(4) $\bar{h}\bar{k}l$:
<i>P2₁2₁2</i>	No. 18 (63)			
(1) <i>hkl</i> :		(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}\bar{k}l$:	(4) $\bar{h}\bar{k}l$:

1. GENERAL RELATIONSHIPS AND TECHNIQUES

Table A1.4.4.1. Crystallographic space groups in reciprocal space (cont.)

$P2_12_12_1$ No. 19 (64)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -101/2	(3) $\bar{h}k\bar{l}$: -011/2	(4) $h\bar{k}\bar{l}$: -110/2
$C222_1$ No. 20 (65)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $\bar{h}k\bar{l}$: -001/2	(4) $h\bar{k}\bar{l}$:
$C222$ No. 21 (66)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $h\bar{k}\bar{l}$:
$F222$ No. 22 (67)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $h\bar{k}\bar{l}$:
$I222$ No. 23 (68)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $h\bar{k}\bar{l}$:
$I2_12_12_1$ No. 24 (69)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -101/2	(3) $\bar{h}k\bar{l}$: -011/2	(4) $h\bar{k}\bar{l}$: -110/2

$Ccc2$ No. 37 (82)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -001/2	(4) $\bar{h}k\bar{l}$: -001/2
$Amm2$ No. 38 (83)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $\bar{h}k\bar{l}$:
$Abm2$ No. 39 (84)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -010/2	(4) $\bar{h}k\bar{l}$: -010/2
$Ama2$ No. 40 (85)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -100/2	(4) $\bar{h}k\bar{l}$: -100/2
$Aba2$ No. 41 (86)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -110/2	(4) $\bar{h}k\bar{l}$: -110/2
$Fmm2$ No. 42 (87)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $\bar{h}k\bar{l}$:
$Fdd2$ No. 43 (88)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -313/4	(4) $\bar{h}k\bar{l}$: -133/4
$Imn2$ No. 44 (89)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $\bar{h}k\bar{l}$:
$Iba2$ No. 45 (90)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -110/2	(4) $\bar{h}k\bar{l}$: -110/2
$Ima2$ No. 46 (91)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -100/2	(4) $\bar{h}k\bar{l}$: -100/2

Point group: $mm2$ Orthorhombic	Laue group: mmm			
$Pmm2$ No. 25 (70)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $\bar{h}k\bar{l}$:
$Pmc2_1$ No. 26 (71)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $\bar{h}k\bar{l}$: -001/2	(4) $\bar{h}k\bar{l}$:
$Pcc2$ No. 27 (72)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -001/2	(4) $\bar{h}k\bar{l}$: -001/2
$Pma2$ No. 28 (73)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -100/2	(4) $\bar{h}k\bar{l}$: -100/2
$Pca2_1$ No. 29 (74)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $\bar{h}k\bar{l}$: -100/2	(4) $\bar{h}k\bar{l}$: -101/2
$Pnc2$ No. 30 (75)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -011/2	(4) $\bar{h}k\bar{l}$: -011/2
$Pmn2_1$ No. 31 (76)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -101/2	(3) $\bar{h}k\bar{l}$: -101/2	(4) $\bar{h}k\bar{l}$:
$Pba2$ No. 32 (77)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -110/2	(4) $\bar{h}k\bar{l}$: -110/2
$Pna2_1$ No. 33 (78)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $\bar{h}k\bar{l}$: -110/2	(4) $\bar{h}k\bar{l}$: -111/2
$Pnn2$ No. 34 (79)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -111/2	(4) $\bar{h}k\bar{l}$: -111/2
$Cmm2$ No. 35 (80)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $\bar{h}k\bar{l}$:
$Cmc2_1$ No. 36 (81)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $\bar{h}k\bar{l}$: -001/2	(4) $\bar{h}k\bar{l}$:

Point group: mmm Orthorhombic	Laue group: mmm			
$Pmmm$ No. 47 (92)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $\bar{h}k\bar{l}$:
$Pnnn$ Origin 1 No. 48 (93)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $\bar{h}k\bar{l}$:
	(5) $\bar{h}k\bar{l}$: -111/2	(6) $\bar{h}k\bar{l}$: -111/2	(7) $\bar{h}k\bar{l}$: -111/2	(8) $\bar{h}k\bar{l}$: -111/2
$Pnnn$ Origin 2 No. 48 (94)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $\bar{h}k\bar{l}$: -101/2	(4) $\bar{h}k\bar{l}$: -011/2
$Pccm$ No. 49 (95)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -001/2	(4) $\bar{h}k\bar{l}$: -001/2
$Pban$ Origin 1 No. 50 (96)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $\bar{h}k\bar{l}$:
	(5) $\bar{h}k\bar{l}$: -110/2	(6) $\bar{h}k\bar{l}$: -110/2	(7) $\bar{h}k\bar{l}$: -110/2	(8) $\bar{h}k\bar{l}$: -110/2
$Pban$ Origin 2 No. 50 (97)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $\bar{h}k\bar{l}$: -100/2	(4) $\bar{h}k\bar{l}$: -010/2
$Pmma$ No. 51 (98)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -100/2	(3) $\bar{h}k\bar{l}$:	(4) $\bar{h}k\bar{l}$: -100/2
$Pnna$ No. 52 (99)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -100/2	(3) $\bar{h}k\bar{l}$: -111/2	(4) $\bar{h}k\bar{l}$: -011/2

1.4. SYMMETRY IN RECIPROCAL SPACE

Table A1.4.4.1. Crystallographic space groups in reciprocal space (cont.)

<i>Pmna</i> No. 53 (100)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -101/2	(3) $\bar{h}k\bar{l}$: -101/2	(4) $h\bar{k}\bar{l}$:
<i>Pcca</i> No. 54 (101)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -100/2	(3) $\bar{h}k\bar{l}$: -001/2	(4) $h\bar{k}\bar{l}$: -101/2
<i>Pbam</i> No. 55 (102)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -110/2	(4) $h\bar{k}\bar{l}$: -110/2
<i>Pccn</i> No. 56 (103)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $\bar{h}k\bar{l}$: -011/2	(4) $h\bar{k}\bar{l}$: -101/2
<i>Pbcm</i> No. 57 (104)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $\bar{h}k\bar{l}$: -011/2	(4) $h\bar{k}\bar{l}$: -010/2
<i>Pnmm</i> No. 58 (105)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -111/2	(4) $h\bar{k}\bar{l}$: -111/2
<i>Pmnm</i> Origin 1 No. 59 (106)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -110/2	(4) $h\bar{k}\bar{l}$: -110/2
(5) $\bar{h}\bar{k}l$: -110/2	(6) $h\bar{k}l$: -110/2	(7) $\bar{h}k\bar{l}$:	(8) $\bar{h}k\bar{l}$:
<i>Pmnm</i> Origin 2 No. 59 (107)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $\bar{h}k\bar{l}$: -010/2	(4) $h\bar{k}\bar{l}$: -100/2
<i>Pbcn</i> No. 60 (108)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -111/2	(3) $\bar{h}k\bar{l}$: -001/2	(4) $h\bar{k}\bar{l}$: -110/2
<i>Pbca</i> No. 61 (109)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -101/2	(3) $\bar{h}k\bar{l}$: -011/2	(4) $h\bar{k}\bar{l}$: -110/2
<i>Pnma</i> No. 62 (110)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -101/2	(3) $\bar{h}k\bar{l}$: -010/2	(4) $h\bar{k}\bar{l}$: -111/2
<i>Cmcm</i> No. 63 (111)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $\bar{h}k\bar{l}$: -001/2	(4) $h\bar{k}\bar{l}$:
<i>Cmca</i> No. 64 (112)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -011/2	(3) $\bar{h}k\bar{l}$: -011/2	(4) $h\bar{k}\bar{l}$:
<i>Cmmm</i> No. 65 (113)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $h\bar{k}\bar{l}$:
<i>Cccm</i> No. 66 (114)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -001/2	(4) $h\bar{k}\bar{l}$: -001/2
<i>Cmma</i> No. 67 (115)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -010/2	(3) $\bar{h}k\bar{l}$: -010/2	(4) $h\bar{k}\bar{l}$:
<i>Ccca</i> Origin 1 No. 68 (116)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $\bar{h}k\bar{l}$:	(4) $h\bar{k}\bar{l}$: -110/2
(5) $\bar{h}\bar{k}l$: -011/2	(6) $h\bar{k}l$: -101/2	(7) $\bar{h}k\bar{l}$: -011/2	(8) $\bar{h}k\bar{l}$: -101/2
<i>Ccca</i> Origin 2 No. 68 (117)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -100/2	(3) $\bar{h}k\bar{l}$: -001/2	(4) $h\bar{k}\bar{l}$: -101/2

<i>Fmmm</i> No. 69 (118)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $h\bar{k}\bar{l}$:
<i>Fddd</i> Origin 1 No. 70 (119)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $h\bar{k}\bar{l}$:
(5) $\bar{h}\bar{k}l$: -111/4	(6) $h\bar{k}l$: -111/4	(7) $\bar{h}k\bar{l}$: -111/4	(8) $\bar{h}k\bar{l}$: -111/4
<i>Fddd</i> Origin 2 No. 70 (120)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -330/4	(3) $\bar{h}k\bar{l}$: -303/4	(4) $h\bar{k}\bar{l}$: -033/4
<i>Immm</i> No. 71 (121)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$:	(4) $h\bar{k}\bar{l}$:
<i>Ibam</i> No. 72 (122)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{h}k\bar{l}$: -110/2	(4) $h\bar{k}\bar{l}$: -110/2
<i>Ibca</i> No. 73 (123)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -101/2	(3) $\bar{h}k\bar{l}$: -011/2	(4) $h\bar{k}\bar{l}$: -110/2
<i>Imma</i> No. 74 (124)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -010/2	(3) $\bar{h}k\bar{l}$: -010/2	(4) $h\bar{k}\bar{l}$:

Point group: 4 Tetragonal Laue group: 4/m			
<i>P4</i> No. 75 (125)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
<i>P4₁</i> No. 76 (126)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $k\bar{h}l$: -001/4	(4) $\bar{k}hl$: -003/4
<i>P4₂</i> No. 77 (127)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -001/2	(4) $\bar{k}hl$: -001/2
<i>P4₃</i> No. 78 (128)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $k\bar{h}l$: -003/4	(4) $\bar{k}hl$: -001/4
<i>I4</i> No. 79 (129)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
<i>I4₁</i> No. 80 (130)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -111/2	(3) $k\bar{h}l$: -021/4	(4) $\bar{k}hl$: -203/4

Point group: $\bar{4}$ Tetragonal Laue group: 4/m			
<i>P$\bar{4}$</i> No. 81 (131)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
<i>I$\bar{4}$</i> No. 82 (132)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:

Point group: 4/m Tetragonal Laue group: 4/m			
<i>P4/m</i> No. 83 (133)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:

1. GENERAL RELATIONSHIPS AND TECHNIQUES

Table A1.4.4.1. Crystallographic space groups in reciprocal space (cont.)

$P4_2/m$ No. 84 (134)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -001/2	(4) $\bar{k}hl$: -001/2
$P4/n$ Origin 1 No. 85 (135)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -110/2	(4) $\bar{k}hl$: -110/2
(5) $\bar{h}\bar{k}l$: -110/2	(6) $hk\bar{l}$: -110/2	(7) $k\bar{h}l$:	(8) khl :
$P4/n$ Origin 2 No. 85 (136)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -100/2	(4) $\bar{k}hl$: -010/2
$P4_2/n$ Origin 1 No. 86 (137)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -111/2	(4) $\bar{k}hl$: -111/2
(5) $\bar{h}\bar{k}l$: -111/2	(6) $hk\bar{l}$: -111/2	(7) $k\bar{h}l$:	(8) khl :
$P4_2/n$ Origin 2 No. 86 (138)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -011/2	(4) $\bar{k}hl$: -101/2
$I4/m$ No. 87 (139)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
$I4_1/a$ Origin 1 No. 88 (140)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -111/2	(3) $k\bar{h}l$: -021/4	(4) $\bar{k}hl$: -203/4
(5) $\bar{h}\bar{k}l$: -021/4	(6) $hk\bar{l}$: -203/4	(7) $k\bar{h}l$:	(8) khl : -111/2
$I4_1/a$ Origin 2 No. 88 (141)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -101/2	(3) $k\bar{h}l$: -311/4	(4) $\bar{k}hl$: -333/4

Point group: 422 Tetragonal Laue group: 4/mmm			
$P422$ No. 89 (142)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
(5) $\bar{h}\bar{k}l$:	(6) $hk\bar{l}$:	(7) khl :	(8) $\bar{k}hl$:
$P42_12$ No. 90 (143)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -110/2	(4) $\bar{k}hl$: -110/2
(5) $\bar{h}\bar{k}l$: -110/2	(6) $hk\bar{l}$: -110/2	(7) khl :	(8) $\bar{k}hl$:
$P4_122$ No. 91 (144)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $k\bar{h}l$: -001/4	(4) $\bar{k}hl$: -003/4
(5) $\bar{h}\bar{k}l$:	(6) $hk\bar{l}$: -001/2	(7) khl : -003/4	(8) $\bar{k}hl$: -001/4
$P4_12_12$ No. 92 (145)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $k\bar{h}l$: -221/4	(4) $\bar{k}hl$: -223/4
(5) $\bar{h}\bar{k}l$: -221/4	(6) $hk\bar{l}$: -223/4	(7) khl :	(8) $\bar{k}hl$: -001/2
$P4_222$ No. 93 (146)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -001/2	(4) $\bar{k}hl$: -001/2
(5) $\bar{h}\bar{k}l$:	(6) $hk\bar{l}$:	(7) khl : -001/2	(8) $\bar{k}hl$: -001/2
$P4_22_12$ No. 94 (147)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -111/2	(4) $\bar{k}hl$: -111/2
(5) $\bar{h}\bar{k}l$: -111/2	(6) $hk\bar{l}$: -111/2	(7) khl :	(8) $\bar{k}hl$:
$P4_322$ No. 95 (148)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $k\bar{h}l$: -003/4	(4) $\bar{k}hl$: -001/4
(5) $\bar{h}\bar{k}l$:	(6) $hk\bar{l}$: -001/2	(7) khl : -001/4	(8) $\bar{k}hl$: -003/4

$P4_32_12$ No. 96 (149)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -001/2	(3) $k\bar{h}l$: -223/4	(4) $\bar{k}hl$: -221/4
(5) $\bar{h}\bar{k}l$: -223/4	(6) $hk\bar{l}$: -221/4	(7) khl :	(8) $\bar{k}hl$: -001/2
$I422$ No. 97 (150)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
(5) $\bar{h}\bar{k}l$:	(6) $hk\bar{l}$:	(7) khl :	(8) $\bar{k}hl$:
$I4_122$ No. 98 (151)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -111/2	(3) $k\bar{h}l$: -021/4	(4) $\bar{k}hl$: -203/4
(5) $\bar{h}\bar{k}l$: -203/4	(6) $hk\bar{l}$: -021/4	(7) khl : -111/2	(8) $\bar{k}hl$:

Point group: 4mm Tetragonal Laue group: 4/mmm			
$P4mm$ No. 99 (152)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
(5) $\bar{h}\bar{k}l$:	(6) $hk\bar{l}$:	(7) khl :	(8) khl :
$P4bm$ No. 100 (153)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
(5) $\bar{h}\bar{k}l$: -110/2	(6) $hk\bar{l}$: -110/2	(7) khl : -110/2	(8) khl : -110/2
$P4_2cm$ No. 101 (154)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -001/2	(4) $\bar{k}hl$: -001/2
(5) $\bar{h}\bar{k}l$: -001/2	(6) $hk\bar{l}$: -001/2	(7) khl :	(8) khl :
$P4_2nm$ No. 102 (155)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -111/2	(4) $\bar{k}hl$: -111/2
(5) $\bar{h}\bar{k}l$: -111/2	(6) $hk\bar{l}$: -111/2	(7) khl :	(8) khl :
$P4cc$ No. 103 (156)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
(5) $\bar{h}\bar{k}l$: -001/2	(6) $hk\bar{l}$: -001/2	(7) khl : -001/2	(8) khl : -001/2
$P4nc$ No. 104 (157)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
(5) $\bar{h}\bar{k}l$: -111/2	(6) $hk\bar{l}$: -111/2	(7) khl : -111/2	(8) khl : -111/2
$P4_2mc$ No. 105 (158)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -001/2	(4) $\bar{k}hl$: -001/2
(5) $\bar{h}\bar{k}l$:	(6) $hk\bar{l}$:	(7) khl : -001/2	(8) khl : -001/2
$P4_2bc$ No. 106 (159)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -001/2	(4) $\bar{k}hl$: -001/2
(5) $\bar{h}\bar{k}l$: -110/2	(6) $hk\bar{l}$: -110/2	(7) khl : -111/2	(8) khl : -111/2
$I4mm$ No. 107 (160)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
(5) $\bar{h}\bar{k}l$:	(6) $hk\bar{l}$:	(7) khl :	(8) khl :
$I4cm$ No. 108 (161)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
(5) $\bar{h}\bar{k}l$: -001/2	(6) $hk\bar{l}$: -001/2	(7) khl : -001/2	(8) khl : -001/2

1.4. SYMMETRY IN RECIPROCAL SPACE

Table A1.4.4.1. Crystallographic space groups in reciprocal space (cont.)

$I4_1md$ No. 109 (162)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -111/2	(3) $k\bar{h}l$: -021/4	(4) $\bar{k}hl$: -203/4
	(5) $\bar{h}k\bar{l}$:	(6) $\bar{h}kl$: -111/2	(7) $\bar{k}hl$: -203/4	(8) $kh\bar{l}$: -021/4
$I4_1cd$ No. 110 (163)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -111/2	(3) $k\bar{h}l$: -021/4	(4) $\bar{k}hl$: -203/4
	(5) $\bar{h}k\bar{l}$: -001/2	(6) $\bar{h}kl$: -110/2	(7) $\bar{k}hl$: -201/4	(8) $kh\bar{l}$: -023/4

Point group: $\bar{4}2m$	Tetragonal	Laue group: $4/mmm$		
$P\bar{4}2m$ No. 111 (164)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$:	(6) $\bar{h}kl$:	(7) $\bar{k}hl$:	(8) $kh\bar{l}$:
$P\bar{4}2c$ No. 112 (165)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$: -001/2	(6) $\bar{h}kl$: -001/2	(7) $\bar{k}hl$: -001/2	(8) $kh\bar{l}$: -001/2
$P\bar{4}2_1m$ No. 113 (166)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$: -110/2	(6) $\bar{h}kl$: -110/2	(7) $\bar{k}hl$: -110/2	(8) $kh\bar{l}$: -110/2
$P\bar{4}2_1c$ No. 114 (167)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$: -111/2	(6) $\bar{h}kl$: -111/2	(7) $\bar{k}hl$: -111/2	(8) $kh\bar{l}$: -111/2
$P\bar{4}m2$ No. 115 (168)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$:	(6) $\bar{h}kl$:	(7) $kh\bar{l}$:	(8) $\bar{k}h\bar{l}$:
$P\bar{4}c2$ No. 116 (169)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$: -001/2	(6) $\bar{h}kl$: -001/2	(7) $kh\bar{l}$: -001/2	(8) $\bar{k}h\bar{l}$: -001/2
$P\bar{4}b2$ No. 117 (170)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$: -110/2	(6) $\bar{h}kl$: -110/2	(7) $kh\bar{l}$: -110/2	(8) $\bar{k}h\bar{l}$: -110/2
$P\bar{4}n2$ No. 118 (171)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$: -111/2	(6) $\bar{h}kl$: -111/2	(7) $kh\bar{l}$: -111/2	(8) $\bar{k}h\bar{l}$: -111/2
$\bar{I}4m2$ No. 119 (172)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$:	(6) $\bar{h}kl$:	(7) $kh\bar{l}$:	(8) $\bar{k}h\bar{l}$:
$\bar{I}4c2$ No. 120 (173)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$: -001/2	(6) $\bar{h}kl$: -001/2	(7) $kh\bar{l}$: -001/2	(8) $\bar{k}h\bar{l}$: -001/2
$\bar{I}42m$ No. 121 (174)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$:	(6) $\bar{h}kl$:	(7) $\bar{k}h\bar{l}$:	(8) $kh\bar{l}$:
$\bar{I}42d$ No. 122 (175)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $\bar{k}h\bar{l}$:	(4) $k\bar{h}l$:
	(5) $\bar{h}k\bar{l}$: -203/4	(6) $\bar{h}kl$: -203/4	(7) $\bar{k}h\bar{l}$: -021/4	(8) $kh\bar{l}$: -021/4

Point group: $4/mmm$	Tetragonal	Laue group: $4/mmm$		
$P4/mmm$ No. 123 (176)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
	(5) $\bar{h}k\bar{l}$:	(6) $\bar{h}kl$:	(7) $kh\bar{l}$:	(8) $\bar{k}h\bar{l}$:
$P4/mcc$ No. 124 (177)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
	(5) $\bar{h}k\bar{l}$: -001/2	(6) $\bar{h}kl$: -001/2	(7) $kh\bar{l}$: -001/2	(8) $\bar{k}h\bar{l}$: -001/2
$P4/nbm$ Origin 1 No. 125 (178)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
	(5) $\bar{h}k\bar{l}$:	(6) $\bar{h}kl$:	(7) $kh\bar{l}$:	(8) $\bar{k}h\bar{l}$:
	(9) $\bar{h}k\bar{l}$: -110/2	(10) $\bar{h}kl$: -110/2	(11) $\bar{k}h\bar{l}$: -110/2	(12) $k\bar{h}l$: -110/2
	(13) $\bar{h}k\bar{l}$: -110/2	(14) $\bar{h}kl$: -110/2	(15) $\bar{k}h\bar{l}$: -110/2	(16) $kh\bar{l}$: -110/2
$P4/nbm$ Origin 2 No. 125 (179)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -100/2	(4) $\bar{k}hl$: -010/2
	(5) $\bar{h}k\bar{l}$: -100/2	(6) $\bar{h}kl$: -010/2	(7) $kh\bar{l}$:	(8) $\bar{k}h\bar{l}$: -110/2
$P4/nnc$ Origin 1 No. 126 (180)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
	(5) $\bar{h}k\bar{l}$:	(6) $\bar{h}kl$:	(7) $kh\bar{l}$:	(8) $\bar{k}h\bar{l}$:
	(9) $\bar{h}k\bar{l}$: -111/2	(10) $\bar{h}kl$: -111/2	(11) $\bar{k}h\bar{l}$: -111/2	(12) $k\bar{h}l$: -111/2
	(13) $\bar{h}k\bar{l}$: -111/2	(14) $\bar{h}kl$: -111/2	(15) $\bar{k}h\bar{l}$: -111/2	(16) $kh\bar{l}$: -111/2
$P4/nnc$ Origin 2 No. 126 (181)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -100/2	(4) $\bar{k}hl$: -010/2
	(5) $\bar{h}k\bar{l}$: -101/2	(6) $\bar{h}kl$: -011/2	(7) $kh\bar{l}$: -001/2	(8) $\bar{k}h\bar{l}$: -111/2
$P4/mbm$ No. 127 (182)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
	(5) $\bar{h}k\bar{l}$: -110/2	(6) $\bar{h}kl$: -110/2	(7) $kh\bar{l}$: -110/2	(8) $\bar{k}h\bar{l}$: -110/2
$P4/mnc$ No. 128 (183)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:
	(5) $\bar{h}k\bar{l}$: -111/2	(6) $\bar{h}kl$: -111/2	(7) $kh\bar{l}$: -111/2	(8) $\bar{k}h\bar{l}$: -111/2
$P4/nmm$ Origin 1 No. 129 (184)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -110/2	(4) $\bar{k}hl$: -110/2
	(5) $\bar{h}k\bar{l}$: -110/2	(6) $\bar{h}kl$: -110/2	(7) $kh\bar{l}$:	(8) $\bar{k}h\bar{l}$:
	(9) $\bar{h}k\bar{l}$: -110/2	(10) $\bar{h}kl$: -110/2	(11) $\bar{k}h\bar{l}$:	(12) $k\bar{h}l$:
	(13) $\bar{h}k\bar{l}$:	(14) $\bar{h}kl$:	(15) $\bar{k}h\bar{l}$: -110/2	(16) $kh\bar{l}$: -110/2
$P4/nmm$ Origin 2 No. 129 (185)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -100/2	(4) $\bar{k}hl$: -010/2
	(5) $\bar{h}k\bar{l}$: -010/2	(6) $\bar{h}kl$: -100/2	(7) $kh\bar{l}$: -110/2	(8) $\bar{k}h\bar{l}$:
$P4/ncc$ Origin 1 No. 130 (186)	(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -110/2	(4) $\bar{k}hl$: -110/2
	(5) $\bar{h}k\bar{l}$: -111/2	(6) $\bar{h}kl$: -111/2	(7) $kh\bar{l}$: -001/2	(8) $\bar{k}h\bar{l}$: -001/2
	(9) $\bar{h}k\bar{l}$: -110/2	(10) $\bar{h}kl$: -110/2	(11) $\bar{k}h\bar{l}$:	(12) $k\bar{h}l$:
	(13) $\bar{h}k\bar{l}$: -001/2	(14) $\bar{h}kl$: -001/2	(15) $\bar{k}h\bar{l}$: -111/2	(16) $kh\bar{l}$: -111/2
$P4/ncc$ Origin 2 No. 130 (187)	(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -100/2	(4) $\bar{k}hl$: -010/2
	(5) $\bar{h}k\bar{l}$: -011/2	(6) $\bar{h}kl$: -101/2	(7) $kh\bar{l}$: -111/2	(8) $\bar{k}h\bar{l}$: -001/2

1. GENERAL RELATIONSHIPS AND TECHNIQUES

Table A1.4.4.1. Crystallographic space groups in reciprocal space (cont.)

$P4_2/mmc$ No. 131 (188)				$I4_1/amd$ Origin 1 No. 141 (202)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -001/2	(4) $\bar{k}hl$: -001/2	(1) hkl :	(2) $\bar{h}\bar{k}l$: -111/2	(3) $k\bar{h}l$: -021/4	(4) $\bar{k}hl$: -203/4
(5) $\bar{h}\bar{k}l$:	(6) $h\bar{k}l$:	(7) $kh\bar{l}$: -001/2	(8) $\bar{k}hl$: -001/2	(5) $\bar{h}\bar{k}l$: -203/4	(6) $h\bar{k}l$: -021/4	(7) $kh\bar{l}$: -111/2	(8) $\bar{k}hl$:
$P4_2/mcm$ No. 132 (189)				(9) $\bar{h}\bar{k}l$: -021/4 (10) $h\bar{k}l$: -203/4 (11) $\bar{k}hl$: (12) $k\bar{h}l$: -111/2			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -001/2	(4) $\bar{k}hl$: -001/2	(13) $\bar{h}\bar{k}l$: -111/2	(14) $\bar{h}\bar{k}l$:	(15) $\bar{k}hl$: -203/4	(16) $kh\bar{l}$: -021/4
(5) $\bar{h}\bar{k}l$: -001/2	(6) $h\bar{k}l$: -001/2	(7) $kh\bar{l}$:	(8) $\bar{k}hl$:	$I4_1/amd$ Origin 2 No. 141 (203)			
$P4_2/nbc$ Origin 1 No. 133 (190)				(1) hkl :			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -111/2	(4) $\bar{k}hl$: -111/2	(2) $\bar{h}\bar{k}l$: -101/2	(3) $k\bar{h}l$: -131/4	(4) $\bar{k}hl$: -113/4	
(5) $\bar{h}\bar{k}l$: -001/2	(6) $h\bar{k}l$: -001/2	(7) $kh\bar{l}$: -110/2	(8) $\bar{k}hl$: -110/2	(5) $\bar{h}\bar{k}l$: -101/2	(6) $h\bar{k}l$:	(7) $kh\bar{l}$: -131/4	(8) $\bar{k}hl$: -113/4
(9) $\bar{h}\bar{k}l$: -111/2	(10) $h\bar{k}l$: -111/2	(11) $\bar{k}hl$:	(12) $k\bar{h}l$:	$I4_1/acd$ Origin 1 No. 142 (204)			
(13) $\bar{h}\bar{k}l$: -110/2	(14) $\bar{h}\bar{k}l$: -110/2	(15) $\bar{k}hl$: -001/2	(16) $kh\bar{l}$: -001/2	(1) hkl :	(2) $\bar{h}\bar{k}l$: -111/2	(3) $k\bar{h}l$: -021/4	(4) $\bar{k}hl$: -203/4
$P4_2/nbc$ Origin 2 No. 133 (191)				(5) $\bar{h}\bar{k}l$: -201/4 (6) $h\bar{k}l$: -023/4 (7) $kh\bar{l}$: -110/2 (8) $\bar{k}hl$: -001/2			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -101/2	(4) $\bar{k}hl$: -011/2	(9) $\bar{h}\bar{k}l$: -021/4	(10) $h\bar{k}l$: -203/4	(11) $\bar{k}hl$:	(12) $k\bar{h}l$: -111/2
(5) $\bar{h}\bar{k}l$: -100/2	(6) $h\bar{k}l$: -010/2	(7) $kh\bar{l}$: -001/2	(8) $\bar{k}hl$: -111/2	(13) $\bar{h}\bar{k}l$: -110/2	(14) $\bar{h}\bar{k}l$: -001/2	(15) $\bar{k}hl$: -201/4	(16) $kh\bar{l}$: -023/4
$P4_2/nmm$ Origin 1 No. 134 (192)				$I4_1/acd$ Origin 2 No. 142 (205)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -111/2	(4) $\bar{k}hl$: -111/2	(1) hkl :	(2) $\bar{h}\bar{k}l$: -101/2	(3) $k\bar{h}l$: -131/4	(4) $\bar{k}hl$: -113/4
(5) $\bar{h}\bar{k}l$:	(6) $h\bar{k}l$:	(7) $kh\bar{l}$: -111/2	(8) $\bar{k}hl$: -111/2	(5) $\bar{h}\bar{k}l$: -100/2	(6) $h\bar{k}l$: -001/2	(7) $kh\bar{l}$: -133/4	(8) $\bar{k}hl$: -111/4
(9) $\bar{h}\bar{k}l$: -111/2	(10) $h\bar{k}l$: -111/2	(11) $\bar{k}hl$:	(12) $k\bar{h}l$:	Point group: 3 Trigonal Laue group: $\bar{3}$			
(13) $\bar{h}\bar{k}l$: -111/2	(14) $\bar{h}\bar{k}l$: -111/2	(15) $\bar{k}hl$:	(16) $kh\bar{l}$:	$P3$ No. 143 (206)			
$P4_2/nmm$ Origin 2 No. 134 (193)				(1) hkl :			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -101/2	(4) $\bar{k}hl$: -011/2	(2) kil :	(3) ihl :		
(5) $\bar{h}\bar{k}l$: -101/2	(6) $h\bar{k}l$: -011/2	(7) $kh\bar{l}$:	(8) $\bar{k}hl$: -110/2	$P3_1$ No. 144 (207)			
$P4_2/mbc$ No. 135 (194)				(1) hkl :			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -001/2	(4) $\bar{k}hl$: -001/2	(2) kil : -001/3	(3) ihl : -002/3		
(5) $\bar{h}\bar{k}l$: -110/2	(6) $h\bar{k}l$: -110/2	(7) $kh\bar{l}$: -111/2	(8) $\bar{k}hl$: -111/2	$P3_2$ No. 145 (208)			
$P4_2/mmm$ No. 136 (195)				(1) hkl :			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -111/2	(4) $\bar{k}hl$: -111/2	(2) kil : -002/3	(3) ihl : -001/3		
(5) $\bar{h}\bar{k}l$: -111/2	(6) $h\bar{k}l$: -111/2	(7) $kh\bar{l}$:	(8) $\bar{k}hl$:	$R3$ (hexagonal axes) No. 146 (209)			
$P4_2/nmc$ Origin 1 No. 137 (196)				(1) hkl :			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -111/2	(4) $\bar{k}hl$: -111/2	(2) kil :	(3) ihl :		
(5) $\bar{h}\bar{k}l$: -111/2	(6) $h\bar{k}l$: -111/2	(7) $kh\bar{l}$:	(8) $\bar{k}hl$:	$R3$ (rhombohedral axes) No. 146 (210)			
(9) $\bar{h}\bar{k}l$: -111/2	(10) $h\bar{k}l$: -111/2	(11) $\bar{k}hl$:	(12) $k\bar{h}l$:	(1) hkl :	(2) klh :	(3) lhk :	
(13) $\bar{h}\bar{k}l$: -001/2	(14) $\bar{h}\bar{k}l$:	(15) $\bar{k}hl$: -111/2	(16) $kh\bar{l}$: -111/2	Point group: $\bar{3}$ Trigonal Laue group: $\bar{3}$			
$P4_2/nmc$ Origin 2 No. 137 (197)				$P\bar{3}$ No. 147 (211)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -101/2	(4) $\bar{k}hl$: -011/2	(1) hkl :	(2) kil :	(3) ihl :	
(5) $\bar{h}\bar{k}l$: -010/2	(6) $h\bar{k}l$: -100/2	(7) $kh\bar{l}$: -111/2	(8) $\bar{k}hl$: -001/2	$R\bar{3}$ (hexagonal axes) No. 148 (212)			
$P4_2/ncm$ Origin 1 No. 138 (198)				(1) hkl :			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$: -111/2	(4) $\bar{k}hl$: -111/2	(2) kil :	(3) ihl :		
(5) $\bar{h}\bar{k}l$: -110/2	(6) $h\bar{k}l$: -110/2	(7) $kh\bar{l}$: -001/2	(8) $\bar{k}hl$: -001/2	$R\bar{3}$ (rhombohedral axes) No. 148 (213)			
(9) $\bar{h}\bar{k}l$: -111/2	(10) $h\bar{k}l$: -111/2	(11) $\bar{k}hl$:	(12) $k\bar{h}l$:	(1) hkl :	(2) klh :	(3) lhk :	
(13) $\bar{h}\bar{k}l$: -001/2	(14) $\bar{h}\bar{k}l$: -001/2	(15) $\bar{k}hl$: -110/2	(16) $kh\bar{l}$: -110/2	Point group: 32 Trigonal Laue group: $\bar{3}m$			
$P4_2/ncm$ Origin 2 No. 138 (199)				$P312$ No. 149 (214)			
(1) hkl :	(2) $\bar{h}\bar{k}l$: -110/2	(3) $k\bar{h}l$: -101/2	(4) $\bar{k}hl$: -011/2	(1) hkl :	(2) kil :	(3) ihl :	
(5) $\bar{h}\bar{k}l$: -011/2	(6) $h\bar{k}l$: -101/2	(7) $kh\bar{l}$: -110/2	(8) $\bar{k}hl$:	(4) $\bar{k}hl$:	(5) $h\bar{l}l$:	(6) $\bar{i}k\bar{l}$:	
$I4/mmm$ No. 139 (200)				$P321$ No. 150 (215)			
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:	(1) hkl :	(2) kil :	(3) ihl :	
(5) $\bar{h}\bar{k}l$:	(6) $h\bar{k}l$:	(7) $kh\bar{l}$:	(8) $\bar{k}hl$:	(4) $kh\bar{l}$:	(5) $h\bar{l}l$:	(6) $\bar{i}k\bar{l}$:	
$I4/mcm$ No. 140 (201)							
(1) hkl :	(2) $\bar{h}\bar{k}l$:	(3) $k\bar{h}l$:	(4) $\bar{k}hl$:	(1) hkl :	(2) kil :	(3) ihl :	
(5) $\bar{h}\bar{k}l$: -001/2	(6) $h\bar{k}l$: -001/2	(7) $kh\bar{l}$: -001/2	(8) $\bar{k}hl$: -001/2	(4) $kh\bar{l}$:	(5) $h\bar{l}l$:	(6) $\bar{i}k\bar{l}$:	

1.4. SYMMETRY IN RECIPROCAL SPACE

Table A1.4.4.1. Crystallographic space groups in reciprocal space (cont.)

<i>P</i> ₃₁ 12 No. 151 (216)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -001/3	(3) <i>ihl</i> : -002/3
(4) \overline{khl} : -002/3	(5) $\overline{h\bar{i}l}$: -001/3	(6) $\overline{ik\bar{l}}$:
<i>P</i> ₃₁ 21 No. 152 (217)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -001/3	(3) <i>ihl</i> : -002/3
(4) $\overline{kh\bar{l}}$:	(5) $\overline{h\bar{i}l}$: -002/3	(6) $\overline{ik\bar{l}}$: -001/3
<i>P</i> ₃₂ 12 No. 153 (218)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -002/3	(3) <i>ihl</i> : -001/3
(4) \overline{khl} : -001/3	(5) $\overline{h\bar{i}l}$: -002/3	(6) $\overline{ik\bar{l}}$:
<i>P</i> ₃₂ 21 No. 154 (219)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -002/3	(3) <i>ihl</i> : -001/3
(4) $\overline{kh\bar{l}}$:	(5) $\overline{h\bar{i}l}$: -001/3	(6) $\overline{ik\bar{l}}$: -002/3
<i>R</i> 32 (hexagonal axes) No. 155 (220)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) $\overline{kh\bar{l}}$:	(5) $\overline{h\bar{i}l}$:	(6) $\overline{ik\bar{l}}$:
<i>R</i> 32 (rhombohedral axes) No. 155 (221)		
(1) <i>hkl</i> :	(2) <i>klh</i> :	(3) <i>lhk</i> :
(4) \overline{khl} :	(5) $\overline{h\bar{l}k}$:	(6) $\overline{lk\bar{h}}$:

Point group: $3m$	Trigonal	Laue group: $\bar{3}m$
<i>P</i> 3m1 No. 156 (222)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{khl} :	(5) $\overline{h\bar{i}l}$:	(6) $\overline{ik\bar{l}}$:
<i>P</i> 31m No. 157 (223)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) <i>kh\bar{l}</i> :	(5) <i>h\bar{i}l</i> :	(6) <i>ik\bar{l}</i> :
<i>P</i> 3c1 No. 158 (224)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{khl} : -001/2	(5) $\overline{h\bar{i}l}$: -001/2	(6) $\overline{ik\bar{l}}$: -001/2
<i>P</i> 31c No. 159 (225)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) <i>kh\bar{l}</i> : -001/2	(5) <i>h\bar{i}l</i> : -001/2	(6) <i>ik\bar{l}</i> : -001/2
<i>R</i> 3m (hexagonal axes) No. 160 (226)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{khl} :	(5) $\overline{h\bar{i}l}$:	(6) $\overline{ik\bar{l}}$:
<i>R</i> 3m (rhombohedral axes) No. 160 (227)		
(1) <i>hkl</i> :	(2) <i>klh</i> :	(3) <i>lhk</i> :
(4) <i>kh\bar{l}</i> :	(5) <i>h\bar{l}k</i> :	(6) <i>lk\bar{h}</i> :
<i>R</i> 3c (hexagonal axes) No. 161 (228)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{khl} : -001/2	(5) $\overline{h\bar{i}l}$: -001/2	(6) $\overline{ik\bar{l}}$: -001/2
<i>R</i> 3c (rhombohedral axes) No. 161 (229)		
(1) <i>hkl</i> :	(2) <i>klh</i> :	(3) <i>lhk</i> :
(4) <i>kh\bar{l}</i> : -111/2	(5) <i>h\bar{l}k</i> : -111/2	(6) <i>lk\bar{h}</i> : -111/2

Point group: $\bar{3}m$	Trigonal	Laue group: $\bar{3}m$
<i>P</i> $\bar{3}$ 1m No. 162 (230)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{khl} :	(5) $\overline{h\bar{i}l}$:	(6) $\overline{ik\bar{l}}$:
<i>P</i> $\bar{3}$ 1c No. 163 (231)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{khl} : -001/2	(5) $\overline{h\bar{i}l}$: -001/2	(6) $\overline{ik\bar{l}}$: -001/2
<i>P</i> $\bar{3}$ m1 No. 164 (232)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) <i>kh\bar{l}</i> :	(5) <i>h\bar{i}l</i> :	(6) <i>ik\bar{l}</i> :
<i>P</i> $\bar{3}$ c1 No. 165 (233)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) $\overline{kh\bar{l}}$: -001/2	(5) $\overline{h\bar{i}l}$: -001/2	(6) $\overline{ik\bar{l}}$: -001/2
<i>R</i> $\bar{3}$ m (hexagonal axes) No. 166 (234)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) <i>kh\bar{l}</i> :	(5) <i>h\bar{i}l</i> :	(6) <i>ik\bar{l}</i> :
<i>R</i> $\bar{3}$ m (rhombohedral axes) No. 166 (235)		
(1) <i>hkl</i> :	(2) <i>klh</i> :	(3) <i>lhk</i> :
(4) \overline{khl} :	(5) $\overline{h\bar{l}k}$:	(6) $\overline{lk\bar{h}}$:
<i>R</i> $\bar{3}$ c (hexagonal axes) No. 167 (236)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) $\overline{kh\bar{l}}$: -001/2	(5) $\overline{h\bar{i}l}$: -001/2	(6) $\overline{ik\bar{l}}$: -001/2
<i>R</i> $\bar{3}$ c (rhombohedral axes) No. 168 (237)		
(1) <i>hkl</i> :	(2) <i>klh</i> :	(3) <i>lhk</i> :
(4) \overline{khl} : -111/2	(5) $\overline{h\bar{l}k}$: -111/2	(6) $\overline{lk\bar{h}}$: -111/2

Point group: 6	Hexagonal	Laue group: 6/m
<i>P</i> 6 No. 168 (238)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) $\overline{h\bar{k}l}$:	(5) $\overline{k\bar{i}l}$:	(6) $\overline{i\bar{h}l}$:
<i>P</i> 6 ₁ No. 169 (239)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -001/3	(3) <i>ihl</i> : -002/3
(4) $\overline{h\bar{k}l}$: -001/2	(5) $\overline{k\bar{i}l}$: -005/6	(6) $\overline{i\bar{h}l}$: -001/6
<i>P</i> 6 ₅ No. 170 (240)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -002/3	(3) <i>ihl</i> : -001/3
(4) $\overline{h\bar{k}l}$: -001/2	(5) $\overline{k\bar{i}l}$: -001/6	(6) $\overline{i\bar{h}l}$: -005/6
<i>P</i> 6 ₂ No. 171 (241)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -002/3	(3) <i>ihl</i> : -001/3
(4) $\overline{h\bar{k}l}$:	(5) $\overline{k\bar{i}l}$: -002/3	(6) $\overline{i\bar{h}l}$: -001/3
<i>P</i> 6 ₄ No. 172 (242)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -001/3	(3) <i>ihl</i> : -002/3
(4) $\overline{h\bar{k}l}$:	(5) $\overline{k\bar{i}l}$: -001/3	(6) $\overline{i\bar{h}l}$: -002/3

1. GENERAL RELATIONSHIPS AND TECHNIQUES

Table A1.4.4.1. Crystallographic space groups in reciprocal space (cont.)

<i>P</i> 6 ₃ No. 173 (243)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :

Point group: $\overline{6}$ Hexagonal Laue group: 6/m		
<i>P</i> $\overline{6}$ No. 174 (244)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :

Point group: 6/m Hexagonal Laue group: 6/m		
<i>P</i> 6/ <i>m</i> No. 175 (245)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :
<i>P</i> 6 ₃ / <i>m</i> No. 176 (246)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :

Point group: 622 Hexagonal Laue group: 6/mmm		
<i>P</i> 622 No. 177 (247)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :
(7) <i>kh\overline{l}</i> :	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> :
(10) $\overline{kh\overline{l}}$:	(11) $\overline{hi\overline{l}}$:	(12) $\overline{ik\overline{l}}$:
<i>P</i> 6 ₁ 22 No. 178 (248)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -001/3	(3) <i>ihl</i> : -002/3
(4) \overline{hkl} : -001/2	(5) \overline{kil} : -005/6	(6) \overline{ihl} : -001/6
(7) <i>kh\overline{l}</i> : -001/3	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> : -002/3
(10) $\overline{kh\overline{l}}$: -005/6	(11) $\overline{hi\overline{l}}$: -001/2	(12) $\overline{ik\overline{l}}$: -001/6
<i>P</i> 6 ₅ 22 No. 179 (249)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -002/3	(3) <i>ihl</i> : -001/3
(4) \overline{hkl} : -001/2	(5) \overline{kil} : -001/6	(6) \overline{ihl} : -005/6
(7) <i>kh\overline{l}</i> : -002/3	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> : -001/3
(10) $\overline{kh\overline{l}}$: -001/6	(11) $\overline{hi\overline{l}}$: -001/2	(12) $\overline{ik\overline{l}}$: -005/6
<i>P</i> 6 ₂ 22 No. 180 (250)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -002/3	(3) <i>ihl</i> : -001/3
(4) \overline{hkl} :	(5) \overline{kil} : -002/3	(6) \overline{ihl} : -001/3
(7) <i>kh\overline{l}</i> : -002/3	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> : -001/3
(10) $\overline{kh\overline{l}}$: -002/3	(11) $\overline{hi\overline{l}}$:	(12) $\overline{ik\overline{l}}$: -001/3
<i>P</i> 6 ₄ 22 No. 181 (251)		
(1) <i>hkl</i> :	(2) <i>kil</i> : -001/3	(3) <i>ihl</i> : -002/3
(4) \overline{hkl} :	(5) \overline{kil} : -001/3	(6) \overline{ihl} : -002/3
(7) <i>kh\overline{l}</i> : -001/3	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> : -002/3
(10) $\overline{kh\overline{l}}$: -001/3	(11) $\overline{hi\overline{l}}$:	(12) $\overline{ik\overline{l}}$: -002/3
<i>P</i> 6 ₃ 22 No. 182 (252)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} : -001/2	(5) \overline{kil} : -001/2	(6) \overline{ihl} : -001/2
(7) <i>kh\overline{l}</i> :	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> :
(10) $\overline{kh\overline{l}}$: -001/2	(11) $\overline{hi\overline{l}}$: -001/2	(12) $\overline{ik\overline{l}}$: -001/2

Point group: 6mm Hexagonal Laue group: 6/mmm		
<i>P</i> 6mm No. 183 (253)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :
(7) <i>kh\overline{l}</i> :	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> :
(10) <i>kh\overline{l}</i> :	(11) <i>hi\overline{l}</i> :	(12) <i>ik\overline{l}</i> :
<i>P</i> 6cc No. 184 (254)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :
(7) <i>kh\overline{l}</i> : -001/2	(8) <i>hi\overline{l}</i> : -001/2	(9) <i>ik\overline{l}</i> : -001/2
(10) <i>kh\overline{l}</i> : -001/2	(11) <i>hi\overline{l}</i> : -001/2	(12) <i>ik\overline{l}</i> : -001/2
<i>P</i> 6 ₃ cm No. 185 (255)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} : -001/2	(5) \overline{kil} : -001/2	(6) \overline{ihl} : -001/2
(7) <i>kh\overline{l}</i> : -001/2	(8) <i>hi\overline{l}</i> : -001/2	(9) <i>ik\overline{l}</i> : -001/2
(10) <i>kh\overline{l}</i> : -001/2	(11) <i>hi\overline{l}</i> :	(12) <i>ik\overline{l}</i> :
<i>P</i> 6 ₃ mc No. 186 (256)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} : -001/2	(5) \overline{kil} : -001/2	(6) \overline{ihl} : -001/2
(7) <i>kh\overline{l}</i> :	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> :
(10) <i>kh\overline{l}</i> : -001/2	(11) <i>hi\overline{l}</i> : -001/2	(12) <i>ik\overline{l}</i> : -001/2

Point group: $\overline{6}m2$ Hexagonal Laue group: 6/mmm		
<i>P</i> $\overline{6}m2$ No. 187 (257)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :
(7) <i>kh\overline{l}</i> :	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> :
(10) $\overline{kh\overline{l}}$:	(11) $\overline{hi\overline{l}}$:	(12) $\overline{ik\overline{l}}$:
<i>P</i> $\overline{6}c2$ No. 188 (258)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} : -001/2	(5) \overline{kil} : -001/2	(6) \overline{ihl} : -001/2
(7) <i>kh\overline{l}</i> : -001/2	(8) <i>hi\overline{l}</i> : -001/2	(9) <i>ik\overline{l}</i> : -001/2
(10) $\overline{kh\overline{l}}$:	(11) $\overline{hi\overline{l}}$:	(12) $\overline{ik\overline{l}}$:
<i>P</i> $\overline{6}2m$ No. 189 (259)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :
(7) <i>kh\overline{l}</i> :	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> :
(10) <i>kh\overline{l}</i> :	(11) <i>hi\overline{l}</i> :	(12) <i>ik\overline{l}</i> :
<i>P</i> $\overline{6}2c$ No. 190 (260)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} : -001/2	(5) \overline{kil} : -001/2	(6) \overline{ihl} : -001/2
(7) <i>kh\overline{l}</i> :	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> :
(10) <i>kh\overline{l}</i> : -001/2	(11) <i>hi\overline{l}</i> : -001/2	(12) <i>ik\overline{l}</i> : -001/2

Point group: 6/mmm Hexagonal Laue group: 6/mmm		
<i>P</i> 6/ <i>mmm</i> No. 191 (261)		
(1) <i>hkl</i> :	(2) <i>kil</i> :	(3) <i>ihl</i> :
(4) \overline{hkl} :	(5) \overline{kil} :	(6) \overline{ihl} :
(7) <i>kh\overline{l}</i> :	(8) <i>hi\overline{l}</i> :	(9) <i>ik\overline{l}</i> :
(10) $\overline{kh\overline{l}}$:	(11) $\overline{hi\overline{l}}$:	(12) $\overline{ik\overline{l}}$:

1.4. SYMMETRY IN RECIPROCAL SPACE

Table A1.4.4.1. Crystallographic space groups in reciprocal space (cont.)

(17) $\bar{h}\bar{l}k$: -001/2	(18) $\bar{h}\bar{l}k$: -100/2	(19) $\bar{h}\bar{l}k$: -111/2	(20) $\bar{h}\bar{l}k$: -010/2	(21) $\bar{l}kh$: -313/4	(22) $\bar{l}kh$: -133/4	(23) $\bar{l}kh$: -331/4	(24) $\bar{l}kh$: -111/4
(21) $\bar{l}kh$: -001/2	(22) $\bar{l}kh$: -010/2	(23) $\bar{l}kh$: -100/2	(24) $\bar{l}kh$: -111/2	(25) $\bar{h}\bar{k}l$: -111/4	(26) $\bar{h}\bar{k}l$: -133/4	(27) $\bar{h}\bar{k}l$: -331/4	(28) $\bar{h}\bar{k}l$: -313/4
<p>$Pm\bar{3}n$ No. 223 (296)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: (3) $\bar{h}\bar{k}\bar{l}$: (4) $\bar{h}\bar{k}\bar{l}$: (5) klh: (6) $\bar{k}\bar{l}h$: (7) $\bar{k}\bar{l}\bar{h}$: (8) $\bar{k}\bar{l}\bar{h}$: (9) lkh: (10) $\bar{l}kh$: (11) $\bar{l}kh$: (12) $\bar{l}kh$: (13) $kh\bar{l}$: -111/2 (14) $\bar{k}\bar{h}\bar{l}$: -111/2 (15) $\bar{k}\bar{h}\bar{l}$: -111/2 (16) $\bar{k}\bar{h}\bar{l}$: -111/2 (17) $\bar{h}\bar{l}k$: -111/2 (18) $\bar{h}\bar{l}k$: -111/2 (19) $\bar{h}\bar{l}k$: -111/2 (20) $\bar{h}\bar{l}k$: -111/2 (21) $\bar{l}kh$: -111/2 (22) $\bar{l}kh$: -111/2 (23) $\bar{l}kh$: -111/2 (24) $\bar{l}kh$: -111/2</p>				<p>(33) $\bar{l}hk$: -111/4 (34) $\bar{l}hk$: -331/4 (35) $\bar{l}hk$: -313/4 (36) $\bar{l}hk$: -133/4 (37) $\bar{k}\bar{h}l$: -101/2 (38) $kh\bar{l}$: (39) $\bar{k}\bar{h}\bar{l}$: -011/2 (40) $\bar{k}\bar{h}\bar{l}$: -110/2 (41) $\bar{h}\bar{l}k$: -101/2 (42) $\bar{h}\bar{l}k$: -110/2 (43) $h\bar{l}k$: (44) $\bar{h}\bar{l}k$: -011/2 (45) $\bar{l}kh$: -101/2 (46) $\bar{l}kh$: -011/2 (47) $\bar{l}kh$: -110/2 (48) lkh:</p>			
<p>$Pn\bar{3}m$ Origin 1 No. 224 (297)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: (3) $\bar{h}\bar{k}\bar{l}$: (4) $\bar{h}\bar{k}\bar{l}$: (5) klh: (6) $\bar{k}\bar{l}h$: (7) $\bar{k}\bar{l}\bar{h}$: (8) $\bar{k}\bar{l}\bar{h}$: (9) lkh: (10) $\bar{l}kh$: (11) $\bar{l}kh$: (12) $\bar{l}kh$: (13) $kh\bar{l}$: -111/2 (14) $\bar{k}\bar{h}\bar{l}$: -111/2 (15) $\bar{k}\bar{h}\bar{l}$: -111/2 (16) $\bar{k}\bar{h}\bar{l}$: -111/2 (17) $\bar{h}\bar{l}k$: -111/2 (18) $\bar{h}\bar{l}k$: -111/2 (19) $\bar{h}\bar{l}k$: -111/2 (20) $\bar{h}\bar{l}k$: -111/2 (21) $\bar{l}kh$: -111/2 (22) $\bar{l}kh$: -111/2 (23) $\bar{l}kh$: -111/2 (24) $\bar{l}kh$: -111/2 (25) $\bar{h}\bar{k}\bar{l}$: -111/2 (26) $\bar{h}\bar{k}\bar{l}$: -111/2 (27) $\bar{h}\bar{k}\bar{l}$: -111/2 (28) $\bar{h}\bar{k}\bar{l}$: -111/2 (29) $\bar{k}\bar{l}\bar{h}$: -111/2 (30) $\bar{k}\bar{l}\bar{h}$: -111/2 (31) $\bar{k}\bar{l}\bar{h}$: -111/2 (32) $\bar{k}\bar{l}\bar{h}$: -111/2 (33) $\bar{l}hk$: -111/2 (34) $\bar{l}hk$: -111/2 (35) $\bar{l}hk$: -111/2 (36) $\bar{l}hk$: -111/2 (37) $\bar{k}\bar{h}\bar{l}$: (38) $kh\bar{l}$: (39) $\bar{k}\bar{h}\bar{l}$: (40) $\bar{k}\bar{h}\bar{l}$: (41) $\bar{h}\bar{l}k$: (42) $\bar{h}\bar{l}k$: (43) $h\bar{l}k$: (44) $\bar{h}\bar{l}k$: (45) $\bar{l}kh$: (46) $\bar{l}kh$: (47) $\bar{l}kh$: (48) lkh:</p>				<p>$Fd\bar{3}m$ Origin 2 No. 227 (302)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: -312/4 (3) $\bar{h}\bar{k}\bar{l}$: -123/4 (4) $\bar{h}\bar{k}\bar{l}$: -231/4 (5) klh: (6) $\bar{k}\bar{l}h$: -231/4 (7) $\bar{k}\bar{l}\bar{h}$: -312/4 (8) $\bar{k}\bar{l}\bar{h}$: -123/4 (9) lkh: (10) $\bar{l}kh$: -123/4 (11) $\bar{l}kh$: -231/4 (12) $\bar{l}kh$: -312/4 (13) $kh\bar{l}$: -312/4 (14) $\bar{k}\bar{h}\bar{l}$: (15) $\bar{k}\bar{h}\bar{l}$: -123/4 (16) $\bar{k}\bar{h}\bar{l}$: -231/4 (17) $\bar{h}\bar{l}k$: -312/4 (18) $\bar{h}\bar{l}k$: -231/4 (19) $\bar{h}\bar{l}k$: (20) $\bar{h}\bar{l}k$: -123/4 (21) $\bar{l}kh$: -312/4 (22) $\bar{l}kh$: -123/4 (23) $\bar{l}kh$: -231/4 (24) $\bar{l}kh$:</p>			
<p>$Pn\bar{3}m$ Origin 2 No. 224 (298)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: -110/2 (3) $\bar{h}\bar{k}\bar{l}$: -101/2 (4) $\bar{h}\bar{k}\bar{l}$: -011/2 (5) klh: (6) $\bar{k}\bar{l}h$: -011/2 (7) $\bar{k}\bar{l}\bar{h}$: -110/2 (8) $\bar{k}\bar{l}\bar{h}$: -101/2 (9) lkh: (10) $\bar{l}kh$: -101/2 (11) $\bar{l}kh$: -011/2 (12) $\bar{l}kh$: -110/2 (13) $kh\bar{l}$: -110/2 (14) $\bar{k}\bar{h}\bar{l}$: (15) $\bar{k}\bar{h}\bar{l}$: -101/2 (16) $\bar{k}\bar{h}\bar{l}$: -011/2 (17) $\bar{h}\bar{l}k$: -110/2 (18) $\bar{h}\bar{l}k$: -011/2 (19) $\bar{h}\bar{l}k$: (20) $\bar{h}\bar{l}k$: -101/2 (21) $\bar{l}kh$: -110/2 (22) $\bar{l}kh$: -101/2 (23) $\bar{l}kh$: -011/2 (24) $\bar{l}kh$:</p>				<p>$Fd\bar{3}c$ Origin 1 No. 228 (303)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: -011/2 (3) $\bar{h}\bar{k}\bar{l}$: -110/2 (4) $\bar{h}\bar{k}\bar{l}$: -101/2 (5) klh: (6) $\bar{k}\bar{l}h$: -101/2 (7) $\bar{k}\bar{l}\bar{h}$: -011/2 (8) $\bar{k}\bar{l}\bar{h}$: -110/2 (9) lkh: (10) $\bar{l}kh$: -110/2 (11) $\bar{l}kh$: -101/2 (12) $\bar{l}kh$: -011/2 (13) $kh\bar{l}$: -313/4 (14) $\bar{k}\bar{h}\bar{l}$: -111/4 (15) $\bar{k}\bar{h}\bar{l}$: -133/4 (16) $\bar{k}\bar{h}\bar{l}$: -331/4 (17) $\bar{h}\bar{l}k$: -313/4 (18) $\bar{h}\bar{l}k$: -331/4 (19) $\bar{h}\bar{l}k$: -111/4 (20) $\bar{h}\bar{l}k$: -133/4 (21) $\bar{l}kh$: -313/4 (22) $\bar{l}kh$: -133/4 (23) $\bar{l}kh$: -331/4 (24) $\bar{l}kh$: -111/4 (25) $\bar{h}\bar{k}\bar{l}$: -333/4 (26) $\bar{h}\bar{k}\bar{l}$: -311/4 (27) $\bar{h}\bar{k}\bar{l}$: -113/4 (28) $\bar{h}\bar{k}\bar{l}$: -131/4 (29) $\bar{k}\bar{l}\bar{h}$: -333/4 (30) $\bar{k}\bar{l}\bar{h}$: -131/4 (31) $\bar{k}\bar{l}\bar{h}$: -311/4 (32) $\bar{k}\bar{l}\bar{h}$: -113/4 (33) $\bar{l}hk$: -333/4 (34) $\bar{l}hk$: -113/4 (35) $\bar{l}hk$: -131/4 (36) $\bar{l}hk$: -311/4 (37) $\bar{k}\bar{h}\bar{l}$: -010/2 (38) $kh\bar{l}$: -111/2 (39) $\bar{k}\bar{h}\bar{l}$: -100/2 (40) $\bar{k}\bar{h}\bar{l}$: -001/2 (41) $\bar{h}\bar{l}k$: -010/2 (42) $\bar{h}\bar{l}k$: -001/2 (43) $h\bar{l}k$: -111/2 (44) $\bar{h}\bar{l}k$: -100/2 (45) $\bar{l}kh$: -010/2 (46) $\bar{l}kh$: -100/2 (47) $\bar{l}kh$: -001/2 (48) lkh: -111/2</p>			
<p>$Fm\bar{3}m$ No. 225 (299)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: (3) $\bar{h}\bar{k}\bar{l}$: (4) $\bar{h}\bar{k}\bar{l}$: (5) klh: (6) $\bar{k}\bar{l}h$: (7) $\bar{k}\bar{l}\bar{h}$: (8) $\bar{k}\bar{l}\bar{h}$: (9) lkh: (10) $\bar{l}kh$: (11) $\bar{l}kh$: (12) $\bar{l}kh$: (13) $kh\bar{l}$: (14) $\bar{k}\bar{h}\bar{l}$: (15) $\bar{k}\bar{h}\bar{l}$: (16) $\bar{k}\bar{h}\bar{l}$: (17) $\bar{h}\bar{l}k$: (18) $\bar{h}\bar{l}k$: (19) $\bar{h}\bar{l}k$: (20) $\bar{h}\bar{l}k$: (21) $\bar{l}kh$: (22) $\bar{l}kh$: (23) $\bar{l}kh$: (24) $\bar{l}kh$:</p>				<p>$Fd\bar{3}c$ Origin 2 No. 228 (304)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: -132/4 (3) $\bar{h}\bar{k}\bar{l}$: -321/4 (4) $\bar{h}\bar{k}\bar{l}$: -213/4 (5) klh: (6) $\bar{k}\bar{l}h$: -213/4 (7) $\bar{k}\bar{l}\bar{h}$: -132/4 (8) $\bar{k}\bar{l}\bar{h}$: -321/4 (9) lkh: (10) $\bar{l}kh$: -321/4 (11) $\bar{l}kh$: -213/4 (12) $\bar{l}kh$: -132/4 (13) $kh\bar{l}$: -310/4 (14) $\bar{k}\bar{h}\bar{l}$: -111/2 (15) $\bar{k}\bar{h}\bar{l}$: -103/4 (16) $\bar{k}\bar{h}\bar{l}$: -031/4 (17) $\bar{h}\bar{l}k$: -310/4 (18) $\bar{h}\bar{l}k$: -031/4 (19) $\bar{h}\bar{l}k$: -111/2 (20) $\bar{h}\bar{l}k$: -103/4 (21) $\bar{l}kh$: -310/4 (22) $\bar{l}kh$: -103/4 (23) $\bar{l}kh$: -031/4 (24) $\bar{l}kh$: -111/2</p>			
<p>$Fm\bar{3}c$ No. 226 (300)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: (3) $\bar{h}\bar{k}\bar{l}$: (4) $\bar{h}\bar{k}\bar{l}$: (5) klh: (6) $\bar{k}\bar{l}h$: (7) $\bar{k}\bar{l}\bar{h}$: (8) $\bar{k}\bar{l}\bar{h}$: (9) lkh: (10) $\bar{l}kh$: (11) $\bar{l}kh$: (12) $\bar{l}kh$: (13) $kh\bar{l}$: -111/2 (14) $\bar{k}\bar{h}\bar{l}$: -111/2 (15) $\bar{k}\bar{h}\bar{l}$: -111/2 (16) $\bar{k}\bar{h}\bar{l}$: -111/2 (17) $\bar{h}\bar{l}k$: -111/2 (18) $\bar{h}\bar{l}k$: -111/2 (19) $\bar{h}\bar{l}k$: -111/2 (20) $\bar{h}\bar{l}k$: -111/2 (21) $\bar{l}kh$: -111/2 (22) $\bar{l}kh$: -111/2 (23) $\bar{l}kh$: -111/2 (24) $\bar{l}kh$: -111/2</p>				<p>$Im\bar{3}m$ No. 229 (305)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: (3) $\bar{h}\bar{k}\bar{l}$: (4) $\bar{h}\bar{k}\bar{l}$: (5) klh: (6) $\bar{k}\bar{l}h$: (7) $\bar{k}\bar{l}\bar{h}$: (8) $\bar{k}\bar{l}\bar{h}$: (9) lkh: (10) $\bar{l}kh$: (11) $\bar{l}kh$: (12) $\bar{l}kh$: (13) $kh\bar{l}$: (14) $\bar{k}\bar{h}\bar{l}$: (15) $\bar{k}\bar{h}\bar{l}$: (16) $\bar{k}\bar{h}\bar{l}$: (17) $\bar{h}\bar{l}k$: (18) $\bar{h}\bar{l}k$: (19) $\bar{h}\bar{l}k$: (20) $\bar{h}\bar{l}k$: (21) $\bar{l}kh$: (22) $\bar{l}kh$: (23) $\bar{l}kh$: (24) $\bar{l}kh$:</p>			
<p>$Fd\bar{3}m$ Origin 1 No. 227 (301)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: -011/2 (3) $\bar{h}\bar{k}\bar{l}$: -110/2 (4) $\bar{h}\bar{k}\bar{l}$: -101/2 (5) klh: (6) $\bar{k}\bar{l}h$: -101/2 (7) $\bar{k}\bar{l}\bar{h}$: -011/2 (8) $\bar{k}\bar{l}\bar{h}$: -110/2 (9) lkh: (10) $\bar{l}kh$: -110/2 (11) $\bar{l}kh$: -101/2 (12) $\bar{l}kh$: -011/2 (13) $kh\bar{l}$: -313/4 (14) $\bar{k}\bar{h}\bar{l}$: -111/4 (15) $\bar{k}\bar{h}\bar{l}$: -133/4 (16) $\bar{k}\bar{h}\bar{l}$: -331/4 (17) $\bar{h}\bar{l}k$: -313/4 (18) $\bar{h}\bar{l}k$: -331/4 (19) $\bar{h}\bar{l}k$: -111/4 (20) $\bar{h}\bar{l}k$: -133/4</p>				<p>$Ia\bar{3}d$ No. 230 (306)</p> <p>(1) hkl: (2) $\bar{h}\bar{k}l$: -101/2 (3) $\bar{h}\bar{k}\bar{l}$: -011/2 (4) $\bar{h}\bar{k}\bar{l}$: -110/2 (5) klh: (6) $\bar{k}\bar{l}h$: -110/2 (7) $\bar{k}\bar{l}\bar{h}$: -101/2 (8) $\bar{k}\bar{l}\bar{h}$: -011/2 (9) lkh: (10) $\bar{l}kh$: -011/2 (11) $\bar{l}kh$: -110/2 (12) $\bar{l}kh$: -101/2 (13) $kh\bar{l}$: -311/4 (14) $\bar{k}\bar{h}\bar{l}$: -333/4 (15) $\bar{k}\bar{h}\bar{l}$: -113/4 (16) $\bar{k}\bar{h}\bar{l}$: -131/4 (17) $\bar{h}\bar{l}k$: -311/4 (18) $\bar{h}\bar{l}k$: -131/4 (19) $\bar{h}\bar{l}k$: -333/4 (20) $\bar{h}\bar{l}k$: -113/4 (21) $\bar{l}kh$: -311/4 (22) $\bar{l}kh$: -113/4 (23) $\bar{l}kh$: -131/4 (24) $\bar{l}kh$: -333/4</p>			