

1. INTRODUCTION TO SPACE-GROUP SYMMETRY

**Table 1.6.4.11**

Reflection conditions and possible space groups with Bravais lattice *oI* and Laue class *mmm*; Patterson symmetry *Immm*

Reflection conditions							Space group		Space group		Space group	
<i>hkl</i>	<i>0kl</i>	<i>h0l</i>	<i>hk0</i>	<i>h00</i>	<i>0k0</i>	<i>00l</i>	group	No.	group	No.	group	No.
$h + k + l$	$k + l$	$h + l$	$h + k$	$h$	$k$	$l$	<b>I222</b>	23	<b>I<sub>21</sub>2<sub>1</sub>2<sub>1</sub></b>	24	<i>Imm2</i>	44
							<i>Im2m</i>	44	<i>I2mm</i>	44	<i>Immm</i>	71
$h + k + l$	$k + l$	$h + l$	$h, k$	$h$	$k$	$l$	<i>Im2a</i>	46	<i>I2mb</i>	46	<i>Imma</i>	74
							<i>Immb</i>	74				
$h + k + l$	$k + l$	$h, l$	$h + k$	$h$	$k$	$l$	<i>Ima2</i>	46	<i>I2cm</i>	46	<i>Imam</i>	74
							<i>Imcm</i>	74				
$h + k + l$	$k + l$	$h, l$	$h, k$	$h$	$k$	$l$	<i>I2cb</i>	45	<i>Imcb</i>	72		
$h + k + l$	$k, l$	$h + l$	$h + k$	$h$	$k$	$l$	<i>Ibm2</i>	46	<i>Ic2m</i>	46	<i>Ibmm</i>	74
							<i>Icmm</i>	74				
$h + k + l$	$k, l$	$h + l$	$h, k$	$h$	$k$	$l$	<i>Ic2a</i>	45	<i>Icma</i>	72		
$h + k + l$	$k, l$	$h, l$	$h + k$	$h$	$k$	$l$	<i>Iba2</i>	45	<i>Ibam</i>	72		
$h + k + l$	$k, l$	$h, l$	$h, k$	$h$	$k$	$l$	<i>Ibca</i>	73	<i>Icab</i>	73		

**Table 1.6.4.12**

Reflection conditions and possible space groups with Bravais lattice *oF* and Laue class *mmm*; Patterson symmetry *Fmmm*

Reflection conditions							Space group	
<i>hkl</i>	<i>0kl</i>	<i>h0l</i>	<i>hk0</i>	<i>h00</i>	<i>0k0</i>	<i>00l</i>	group	No.
$h + k, h + l, k + l$	$k, l$	$h, l$	$h, k$	$h$	$k$	$l$	<b>F222</b>	22
							<i>Fmm2</i>	42
							<i>Fm2m</i>	42
							<i>F2mm</i>	42
							<i>Fmmm</i>	69
$h + k, h + l, k + l$	$k, l$	$h + l = 4n; h, l$	$h + k = 4n; h, k$	$h = 4n$	$k = 4n$	$l = 4n$	<i>F2dd</i>	43
$h + k, h + l, k + l$	$k + l = 4n; k, l$	$h, l$	$h + k = 4n; h, k$	$h = 4n$	$k = 4n$	$l = 4n$	<i>Fd2d</i>	43
$h + k, h + l, k + l$	$k + l = 4n; k, l$	$h + l = 4n; h, l$	$h, k$	$h = 4n$	$k = 4n$	$l = 4n$	<i>Fdd2</i>	43
$h + k, h + l, k + l$	$k + l = 4n; k, l$	$h + l = 4n; h, l$	$h + k = 4n; h, k$	$h = 4n$	$k = 4n$	$l = 4n$	<i>Fddd</i>	70

**Table 1.6.4.13**

Reflection conditions and possible space groups with Bravais lattice *tP* and Laue class *4/m*; *hk* are permutable; Patterson symmetry *P4/m*

Reflection conditions					Space group		Space group		Space group	
<i>hk0</i>	<i>0kl</i>	$h \pm hl$	<i>00l</i>	<i>h00</i>	group	No.	group	No.	group	No.
					<b>P4</b>	75	$P\bar{4}$	81	<i>P4/m</i>	83
			$l$		<b>P4<sub>2</sub></b>	77	<i>P4<sub>2</sub>/m</i>	84		
			$l = 4n$		<b>P4<sub>1</sub></b>	76	<b>P4<sub>3</sub></b>	78		
$h + k$				$h$	<i>P4/n</i>	85				
$h + k$			$l$	$h$	<i>P4<sub>2</sub>/n</i>	86				