Symmetry Classification for Serial Crystallography Experiments

Groups with white backgrounds are merohedral and will exhibit indexing ambiguities. Chiral groups are shown in bold, centrosymmetric groups are underlined.

Move downwards or follow grey arrows to find supergroups which can be accessed with only rotation operations. Do not cross vertical or thick black horizontal lines unless following a grey arrow. When you reach a cell with a shaded background, you have found the corresponding "source symmetry". A partial ambiguity resolution could be attempted into any intermediate group you can reach.

Point Groups			Space Groups				

Triclinic lattice

$\bar{1}$	**1**		$P\bar{1}$			**P1**	

Monoclinic lattice

	m				Pm, Pc, Cm, Cc		
2	2/m		**P2, P2$_1$, C2**			$\underline{P2/m}$, $\underline{P2_1/m}$, $\underline{C2/m}$, $\underline{P2/c}$, $\underline{P2_1/c}$, $\underline{C2/c}$	

Orthorhombic lattice

	mm2				Pmm2, Pmc2$_1$, Pcc2, Pma2, Pca2$_1$, Pnc2, Pmn2$_1$, Pba2, Pna2$_1$, Pnn2, Cmm2, Cmc2$_1$, Ccc2, Amm2, Aem2, Ama2, Aea2, Fmm2, Fdd2, Imm2, Iba2, Ima2		
222	mmm		**P222, P222$_1$, P2$_1$2$_1$2, P2$_1$2$_1$2$_1$, C222$_1$, C222, F222, I222, I2$_1$2$_1$2$_1$**			$\underline{Pmmm}$, $\underline{Pnnn}$, $\underline{Pccm}$, $\underline{Pban}$, $\underline{Pmma}$, $\underline{Pnna}$, $\underline{Pmna}$, $\underline{Pcca}$, $\underline{Pbam}$, $\underline{Pccn}$, $\underline{Pbcm}$, $\underline{Pnnm}$, $\underline{Pmmn}$, $\underline{Pbcn}$, $\underline{Pbca}$, $\underline{Pnma}$, $\underline{Cmcm}$, $\underline{Cmce}$, $\underline{Cmmm}$, $\underline{Cccm}$, $\underline{Cmme}$, $\underline{Ccce}$, $\underline{Fmmm}$, $\underline{Fddd}$, $\underline{Immm}$, $\underline{Ibam}$, $\underline{Ibca}$, $\underline{Imma}$	

Tetragonal lattice

	$\bar{4}$			4mm	P4, P4$_1$, P4$_2$, P4$_3$, I4, I4$_1$	$P\bar{4}$, $I\bar{4}$			P4mm, P4bm, P4$_2$cm, P4$_2$nm, P4cc, P4nc, P4$_2$mc, P4$_2$bc, I4mm, I4cm, I4$_1$md, I4$_1$cd
4	$\bar{4}2m$	$\bar{4}m2$	4/m			$P\bar{4}2m$, $P\bar{4}2c$, $P\bar{4}2_1m$, $P\bar{4}2_1c$, $I\bar{4}2m$, $I\bar{4}2d$	$P\bar{4}m2$, $P\bar{4}c2$, $P\bar{4}b2$, $P\bar{4}n2$, $I\bar{4}m2$, $I\bar{4}c2$	$\underline{P4/m}$, $\underline{P4_2/m}$, $\underline{P4/n}$, $\underline{P4_2/n}$, $\underline{I4/m}$, $\underline{I4_1/a}$	
422	4/mmm				**P422, P42$_1$2, P4$_1$22, P4$_1$2$_1$2, P4$_2$22, P4$_2$2$_1$2, P4$_3$22, P4$_3$2$_1$2, I422, I4$_1$22**	$\underline{P4/mmm}$, $\underline{P4/mcc}$, $\underline{P4/nbm}$, $\underline{P4/nnc}$, $\underline{P4/mbm}$, $\underline{P4/mnc}$, $\underline{P4/nmm}$, $\underline{P4/ncc}$, $\underline{P4_2/mmc}$, $\underline{P4_2/mcm}$, $\underline{P4_2/nbc}$, $\underline{P4_2/nnm}$, $\underline{P4_2/mbc}$, $\underline{P4_2/mnm}$, $\underline{P4_2/nmc}$, $\underline{P4_2/ncm}$, $\underline{I4/mmm}$, $\underline{I4/mcm}$, $\underline{I4_1/amd}$, $\underline{I4_1/acd}$			

Rhombohedral lattice

3	3̄	3m	R3 (H3)	R3̄ (H3̄)	R3m (H3m), R3c (H3c)
32	3̄m		R32 (H32)	R3̄m (H3̄m), R3̄c (H3̄c)	

Hexagonal lattice

3	3̄						6mm	P3, P3₁, P3₂			P3̄						P6mm, P6cc, P6₃cm, P6₃mc
6	312	321	3m1	6̄	31m	6/m		P6, P6₁, P6₅, P6₂, P6₄, P6₃	P312, P3₁12, P3₂12	P321, P3₁21, P3₂21	P3m1, P3c1	P6̄	P31m, P31c	P6/m, P6₃/m			
			3̄m1	6̄m2	6̄2m	3̄1m					P3̄m1, P3̄c1	P6̄m2, P6̄c2	P6̄2m, P6̄c2	P3̄1m, P3̄1c			
622	6/mmm							P622, P6₁22, P6₅22, P6₂22, P6₄22, P6₃22			P6/mmm, P6/mcc, P6₃/mcm, P6₃/mmc						

Cubic lattice

23	4̄3m	m3̄	P23, F23, I23, P2₁3, I2₁3	P4̄3m, F4̄3m, I4̄3m, P4̄3n, F4̄3c, I4̄3d	Pm3̄, Pn3̄, Fm3̄, Fd3̄, Im3̄, Pa3̄, Ia3̄
432	m3̄m		P432, P4₂32, F432, F4₁32, I432, P4₃32, P4₁32, I4₁32	Pm3̄m, Pn3̄n, Pm3̄n, Pn3̄m, Fm3̄m, Fm3̄c, Fd3̄m, Fd3̄c, Im3̄m, Ia3̄d	

Laue Classes

1̄	1		
2/m	2	m	
mmm	222	mm2	
4/m	4	4̄	
4/mmm	422	4̄2m	4̄m2	4mm

3̄	3	
3̄m	32	3m
3̄m1	321	3m1
3̄1m	312	31m

6/m	6	6̄	
6/mmm	622	6̄m2	6̄2m	6mm
m3̄	23		
m3̄m	432	4̄32	