

# Symmetry Classification for Serial Crystallography Experiments

Groups with white backgrounds are merohedral and hence data will appear 'twinned'.

Laue Class	Point Groups	Centrosymmetric Space Groups	Non-Centrosymmetric Space Groups
$\bar{1}$	1	$P\bar{1}$	P1
2/m	2 m	P2/m, $P2_1/m$ , C2/m, P2/c, $P2_1/c$ , C2/c	P2, $P2_1$ , C2 $\circ$ Pm, Pc, Cm, Cc
mmm	222 mm2	Pmmm, Pnnn, Pccm, Pban, Pmma, Pnna, Pmna, Pcca, Pbam, Pccn, Pbcm, Pnnm, Pmmn, Pbcn, Pbca, Pnma, Cmcm, Cmce, Cmmm, Cccm, Cmme, Ccce, Fmmm, Fddd, Immm, Ibam, Ibca, Imma	P222, $P222_1$ , $P2_12_12$ , $P2_12_12_1$ , C222 <sub>1</sub> , C222, F222, I222, $I2_12_12_1 \circ$ Pmm2, Pmc2 <sub>1</sub> , Pcc2, Pma2, Pca2 <sub>1</sub> , Pnc2, Pmn2 <sub>1</sub> , Pba2, Pna2 <sub>1</sub> , Pnn2, Cmm2, Cmc2 <sub>1</sub> , Ccc2, Amm2, Aem2, Ama2, Aea2, Fmm2, Fdd2, Imm2, Iba2, Ima2
4/m	4 $\bar{4}$	P4/m, $P4_2/m$ , P4/n, $P4_2/n$ , I4/m, $I4_1/a$	P4, $P4_1$ , $P4_2$ , $P4_3$ , I4, $I4_1 \circ P\bar{4}$ , $I\bar{4}$
4/mmm	422 $\bar{4}2m$ 4mm	P4/mmm, P4/mcc, P4/nbm, P4/nnc, P4/mbm, P4/mnc, P4/nmm, P4/ncc, $P4_2/mmc$ , $P4_2/mcm$ , $P4_2/nbc$ , $P4_2/nnm$ , $P4_2/mbc$ , $P4_2/mnm$ , $P4_2/nmc$ , $P4_2/ncm$ , I4/mmm, I4/mcm, $I4_1/amd$ , $I4_1/acd$	P422, $P42_12$ , $P4_122$ , $P4_12_12$ , $P4_222$ , $P4_22_12$ , $P4_322$ , $P4_32_12$ , I422, $I4_122 \circ P\bar{4}2m$ , $P\bar{4}2c$ , $P\bar{4}2_1m$ , $P\bar{4}2_1c$ , $P\bar{4}m2$ , $P\bar{4}c2$ , $P\bar{4}b2$ , $P\bar{4}n2$ , $I\bar{4}m2$ , $I\bar{4}c2$ , $I\bar{4}2m$ , $I\bar{4}2d \circ P4mm$ , P4bm, $P4_2cm$ , $P4_2nm$ , P4cc, P4nc, $P4_2mc$ , $P4_2bc$ , I4mm, I4cm, $I4_1md$ , $I4_1cd$
$\bar{3}$	3	$P\bar{3}$ , $R\bar{3}$	P3, $P3_1$ , $P3_2$ , R3
$\bar{3}m$	32 3m	$P\bar{3}1m$ , $P\bar{3}1c$ , $P\bar{3}m1$ , $P\bar{3}c1$ , $R\bar{3}m$ , $R\bar{3}c$	P312, P321, $P3_112$ , $P3_121$ , $P3_212$ , $P3_221$ , R32 $\circ$ P3m1, P31m, P3c1, P31c, R3m, R3c
6/m	6 $\bar{6}$	P6/m, $P6_3/m$	P6, $P6_1$ , $P6_5$ , $P6_2$ , $P6_4$ , $P6_3 \circ P\bar{6}$
6/mmm	622 $\bar{6}2m$ 6mm	P6/mmm, P6/mcc, $P6_3/mcm$ , $P6_3/mmc$	P622, $P6_122$ , $P6_522$ , $P6_222$ , $P6_422$ , $P6_322 \circ P\bar{6}m2$ , $P\bar{6}c2$ , $P\bar{6}2m$ , $P\bar{6}2c \circ P6mm$ , P6cc, $P6_3cm$ , $P6_3mc$
$m\bar{3}$	23	$Pm\bar{3}$ , $Pn\bar{3}$ , $Fm\bar{3}$ , $Fd\bar{3}$ , $Im\bar{3}$ , $Pa\bar{3}$ , $Ia\bar{3}$	P23, F23, I23, $P2_13$ , $I2_13$
$m\bar{3}m$	432 $\bar{4}32$	$Pm\bar{3}m$ , $Pn\bar{3}n$ , $Pm\bar{3}n$ , $Pn\bar{3}m$ , $Fm\bar{3}m$ , $Fm\bar{3}c$ , $Fd\bar{3}m$ , $Fd\bar{3}c$ , $Im\bar{3}m$ , $Ia\bar{3}d$	P432, $P4_232$ , F432, $F4_132$ , I432, $P4_332$ , $P4_132$ , $I4_132 \circ P\bar{4}3m$ , $F\bar{4}3m$ , $I\bar{4}3m$ , $P\bar{4}3n$ , $F\bar{4}3c$ , $I\bar{4}3d$

## Symmetry Classification for 2D Serial Crystallography

Groups with white backgrounds are 'merohedral' and hence data will appear 'twinned'.

Laue Class	Point Groups	Centrosymmetric Plane Groups	Non-Centrosymmetric Plane Groups
2	1	p2	p1
2mm	m	p2mm, p2mg, p2gg, c2mm	pm, pg, cm
4	—	p4	—
4mm	—	p4mm, p4gm	—
6	3	p6	p3
6mm	3m	p6mm	p3m1, p31m

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