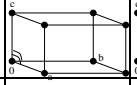
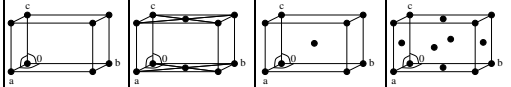
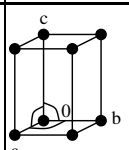
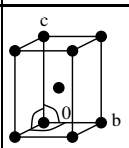
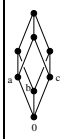
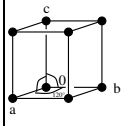
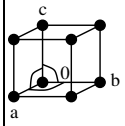
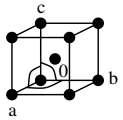
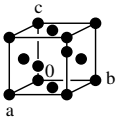
2.4. Raumgruppen

Die 230 Raumgruppen (mit Kristallsystemen, Punktgruppen, Bravaisgittertypen)

Kristall-system	Punkt-gruppe	Gitter-konstanten	Bravaisgittertypen P x,y,z	C x,y,z $x+\frac{1}{2},y+\frac{1}{2},z$	I x,y,z $x+\frac{1}{2},y+\frac{1}{2},z+\frac{1}{2}$	F x,y,z $x+\frac{1}{2},y+\frac{1}{2},z$ $x+\frac{1}{2},y,z+\frac{1}{2}$ $x,y+\frac{1}{2},z+\frac{1}{2}$	Blickrichtung 1.	2.	3.	Raumgruppen
triklin	1	$a \neq b \neq c$					-	-	-	P1
	$\bar{1}$	$\alpha \neq \beta \neq \gamma \neq 90$								P$\bar{1}$
mono-klin	2	$a \neq b \neq c$					[010]	-	-	P2, P2_1, C2
	m	$\alpha = \gamma = 90^o$								Pm, Pc, Cm, Cc
	2/m	$\beta \neq 90^o$								P2/m, P2_1/m, C2/m, P2/c, P2_1/c, C2/c
ortho-rhom-bisch	222	$a \neq b \neq c$					[100]	[010]	[001]	P222, P222_1, P2_12_12, P$2_12_12_1$,
	mm2	$\alpha = \beta = \gamma = 90$								C222_1, C222, F222, I222, I$2_12_12_1$, Pmm2, Pmc2_1, Pcc2, Pma2_1, Pca2_1, Pnc2_1, Pmn2_1, Pba2, Pna2_1, Pnn2, Cmm2, Cmc2_1, Ccc2, Amm2, Abma, Ama2, Aba2, Fmm2, Fdd2, Imm2, Iba2, Ima2
	mmm									Pmmm, Pnnm, Pccm, Pban, Pmma, Pnna, Pmna, Pcca, Pbam, Pccn, Pbcm, Pnnm, Pmmn, Pbcn, Pbca, Pnma, Cmcm, Cmca, Cmmm, Cccm, Cmma, Ccca, Fmmm, Fddd, Immm, Ibam ,Ibca, Imma
tetra-gonal	4	$a = b \neq c$					[001]	[100]	[110]	P4, P4_1, P4_2, P4_3, I4, I4_1
	4	$\alpha = \beta = \gamma = 90$						[010]	[1$\bar{1}$0]	P4, I4
	4/m									P4/m, P4_2/m, P4/n, P4_2/n, I4/m, I4_1/a
	422									P422, P42_12, P4_122, P4_12_12, P4_222, P4_22_12, P4_322, P4_32_12, I422, I4_122
	4mm									P4mm, P4bm, P4_2cm, P4_2nm, P4cc, P4nc, P4_2mc, P4_2bc, I4mm, I4cm, I4_1md, I4_1cd
	4m									P$\bar{4}$2m, P$\bar{4}$2c, P$\bar{4}2_1$m, P$\bar{4}2_1$c, P$\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
	4/mmm									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
tri-gonal	3	$a = b = c$	**R**				[111]	[1$\bar{1}$0]	-	P3, P3_1, P3_2, R3
	$\bar{3}$	$\alpha = \beta = \gamma \neq 90$						[01$\bar{1}$]		P$\bar{3}$, R$\bar{3}$
	32							[$\bar{1}$01]		P312, P321, P3_112, P3_121, P3_212, P3_221, R32
	3m									P3m1, P31m, P3c1, P31c, R3m, R3c
	$\bar{3}$m									P$\bar{3}$1m, P$\bar{3}$1c, P$\bar{3}$m1, P$\bar{3}$c1, R$\bar{3}$m, R$\bar{3}$c
hexa-gonal	6	$a = b \neq c$					[001]	[100]	[1$\bar{1}$0]	P6, P6_1, P6_5, P6_3, P6_2, P6_4
	6	$\alpha = \beta = 90$						[010]	[120]	P$\bar{6}$
	6/m	$\gamma = 120$						[$\bar{1}$10]	[$\bar{2}$10]	P6/m, P6_3/m
	622									P622, P6_122, P6_522, P6_222, P6_422, P6_322
	6mm									P6mm, P6cc, P6_3cm, P6_3mc
	6m									P$\bar{6}$m2, P$\bar{6}$c2, P$\bar{6}$2m, P$\bar{6}$2c
	6/mmm									P6/mmm, P6/mcc, P6_3/mcm, P6_3/mmc
kubisch	23	$a = b = c$					[100]	[111]	[110]	P23, F23, I23, P2_13, I2_13
	m$\bar{3}$	$\alpha = \beta = \gamma = 90$					[010]	[1$\bar{1}$1]	[01$\bar{1}$]	Pm$\bar{3}$, Pn$\bar{3}$, Fm$\bar{3}$, Fd$\bar{3}$, Im$\bar{3}$, Pa$\bar{3}$, Ia$\bar{3}$
	432						[001]	[$\bar{1}$1$\bar{1}$]	[$\bar{1}$01]	P432, P4_232, F432, F4_132, I432, P4_332, P4_132, I4_132
	$\bar{4}$3m							[$\bar{1}\bar{1}$1]	[1$\bar{1}$0]	P$\bar{4}$3m, F$\bar{4}$3m, I$\bar{4}$3m, P$\bar{4}$3n, F$\bar{4}$3c, I$\bar{4}$3d
	m$\bar{3}$m								[011]	Pm$\bar{3}$m, Pn$\bar{3}$n, Pm$\bar{3}$n, Pn$\bar{3}$m,
									[101]	Fm$\bar{3}$m, Fm$\bar{3}$c, Fd$\bar{3}$m, Fd$\bar{3}$c, Im$\bar{3}$m, Ia$\bar{3}$d