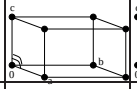
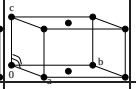
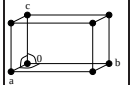
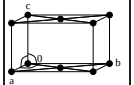
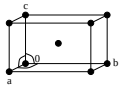
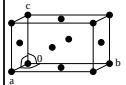
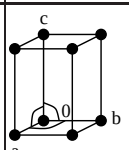
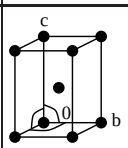
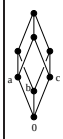
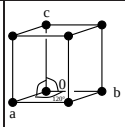
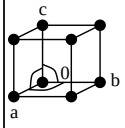
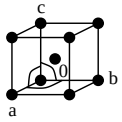
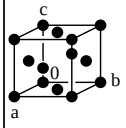
2.4. Raumgruppen

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$_1$2$_1$2, P2$_1$2$_1$2$_1$,
	mm2	$\alpha = \beta = \gamma = 90$								C222$_1$, C222, F222, I222, I2$_1$2$_1$2$_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}$0]	P$\bar{4}$, I$\bar{4}$
	4/m									P4/m, P4$_2$/m, P4/n, P4$_2$/n, I4/m, I4$_1$/a
	422									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$22
	4mm									P4mm, P4bm, P4$_2$cm, P4$_2$nm, P4cc, P4nc, P4$_2$mc, P4$_2$bc, I4mm, I4cm, I4$_1$md, I4$_1$cd
	$\bar{4}$m									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}$01]		P312, P321, P3$_1$12, P3$_1$21, P3$_2$12, P3$_2$21, 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$
	$\bar{6}$	$\alpha = \beta = 90$						[010]	[120]	P$\bar{6}$
	6/m	$\gamma = 120$						[$\bar{1}$10]	[$\bar{2}$10]	P6/m, P6$_3$/m
	622									P622, P6$_1$22, P6$_5$22, P6$_2$22, P6$_4$22, P6$_3$22
	6mm									P6mm, P6cc, P6$_3$cm, P6$_3$mc
	$\bar{6}$m									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$_1$3, I2$_1$3
	m$\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}$01]	P432, P4$_2$32, F432, F4$_1$32, I432, P4$_3$32, P4$_1$32, I4$_1$32
	$\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}$3d
	m3m								[011]	Pm3m, Pn3n, Pm3n, Pn$\bar{3}$m,
									[101]	Fm$\bar{3}$m, Fm3c, Fd$\bar{3}$m, Fd$\bar{3}$c, Im$\bar{3}$m, Ia$\bar{3}$d