Kristall = Gitter x Basis

Basis = periodisch
wiederkehrende Struktureinheit

Fig-FK- 2.1

Kristall = Gitter x Basis

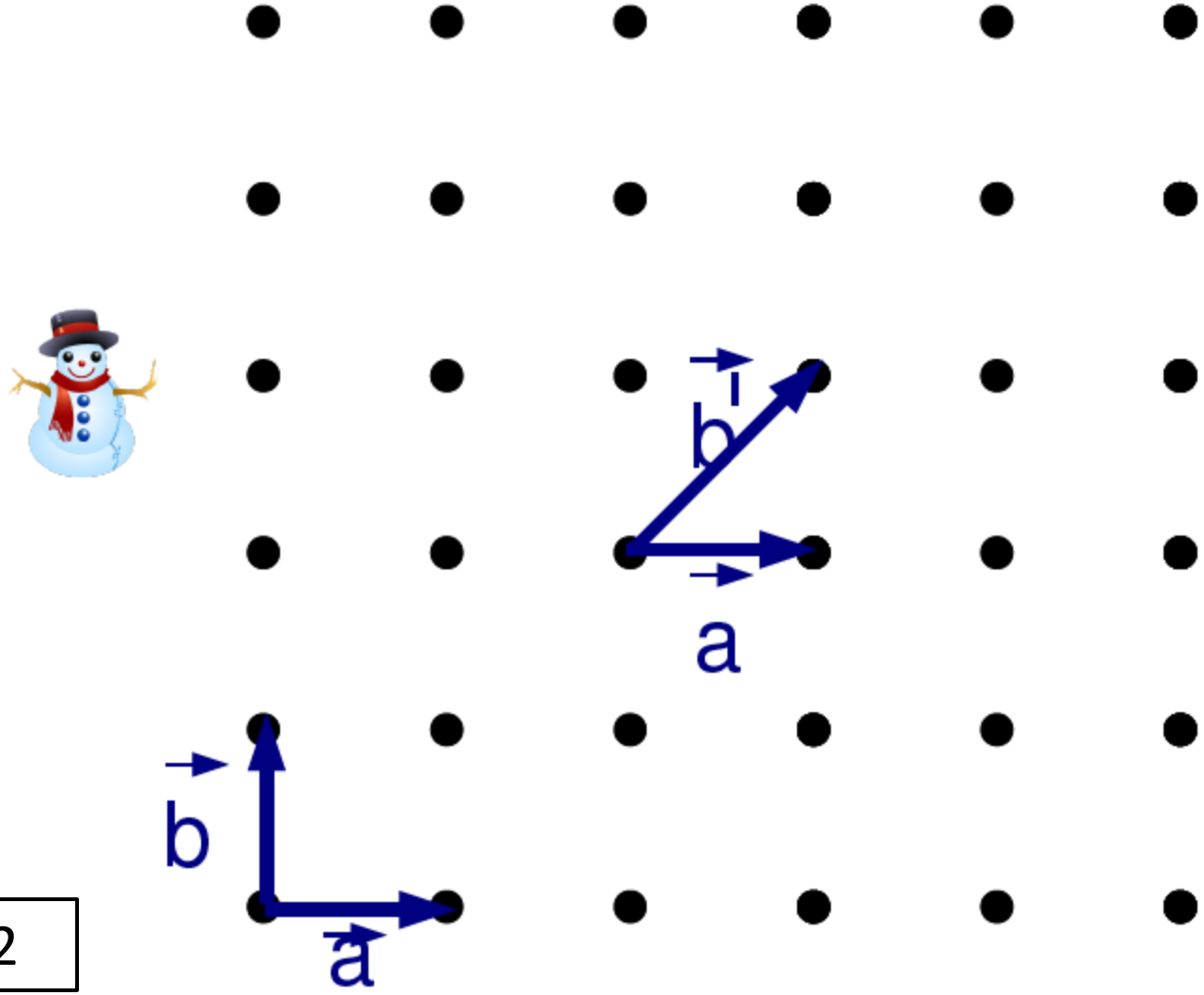
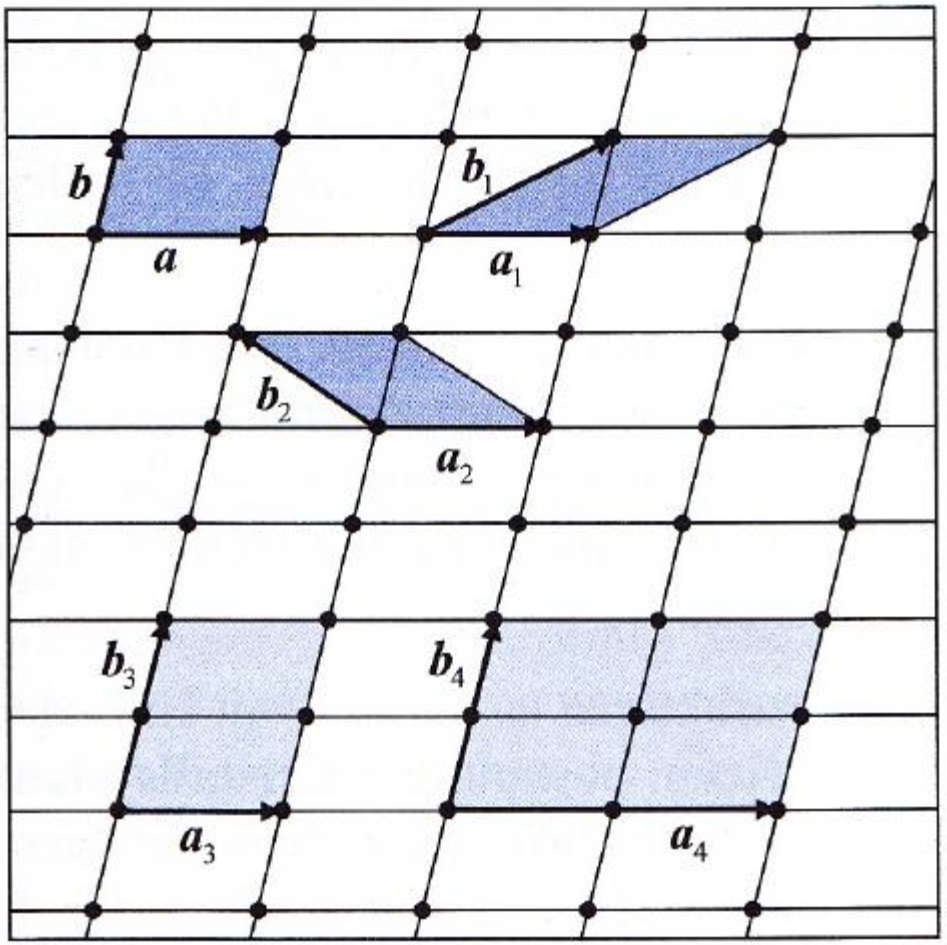


Fig-FK- 2.2

2 dimensionsales Punktgitter: Verschiedene Elementarzellen

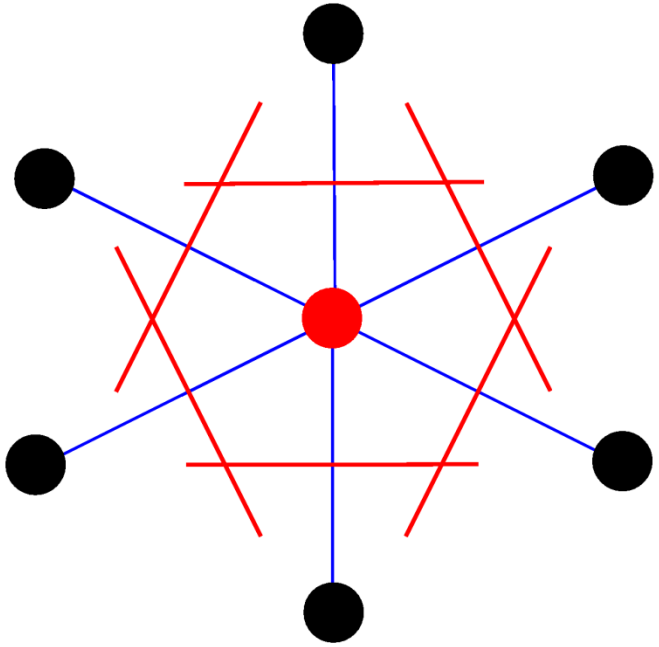


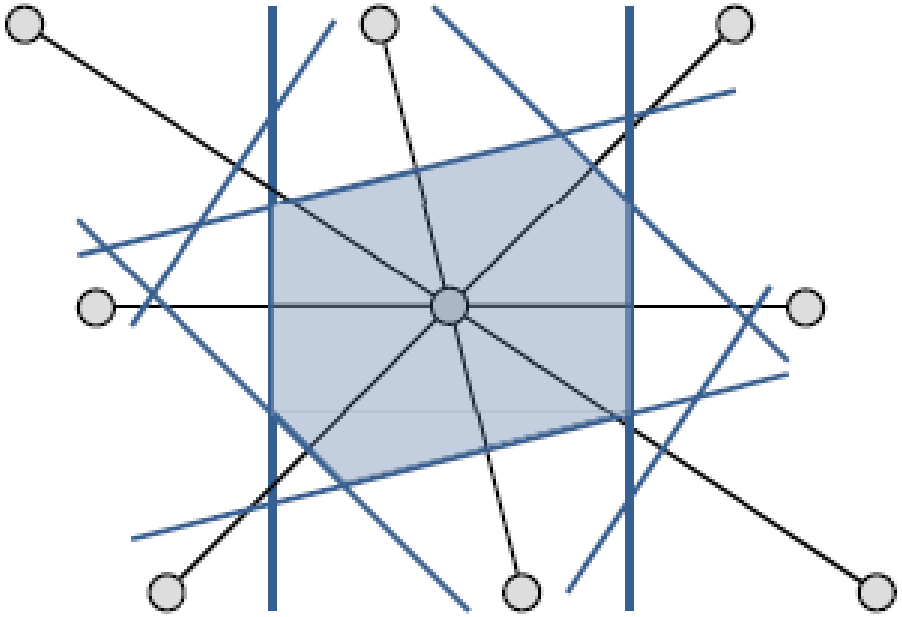
primitiv

Fig-FK- 2.3

Wigner-Seitz Zelle

Fig-FK- 2.4





Im reziproken Gitter bezeichnet man die WSZ als 1. Brillouin-Zone.

2 dimensionale Bravais-Gitter:

Allg. schiefwinkelige Zelle + 4 Spezialfälle

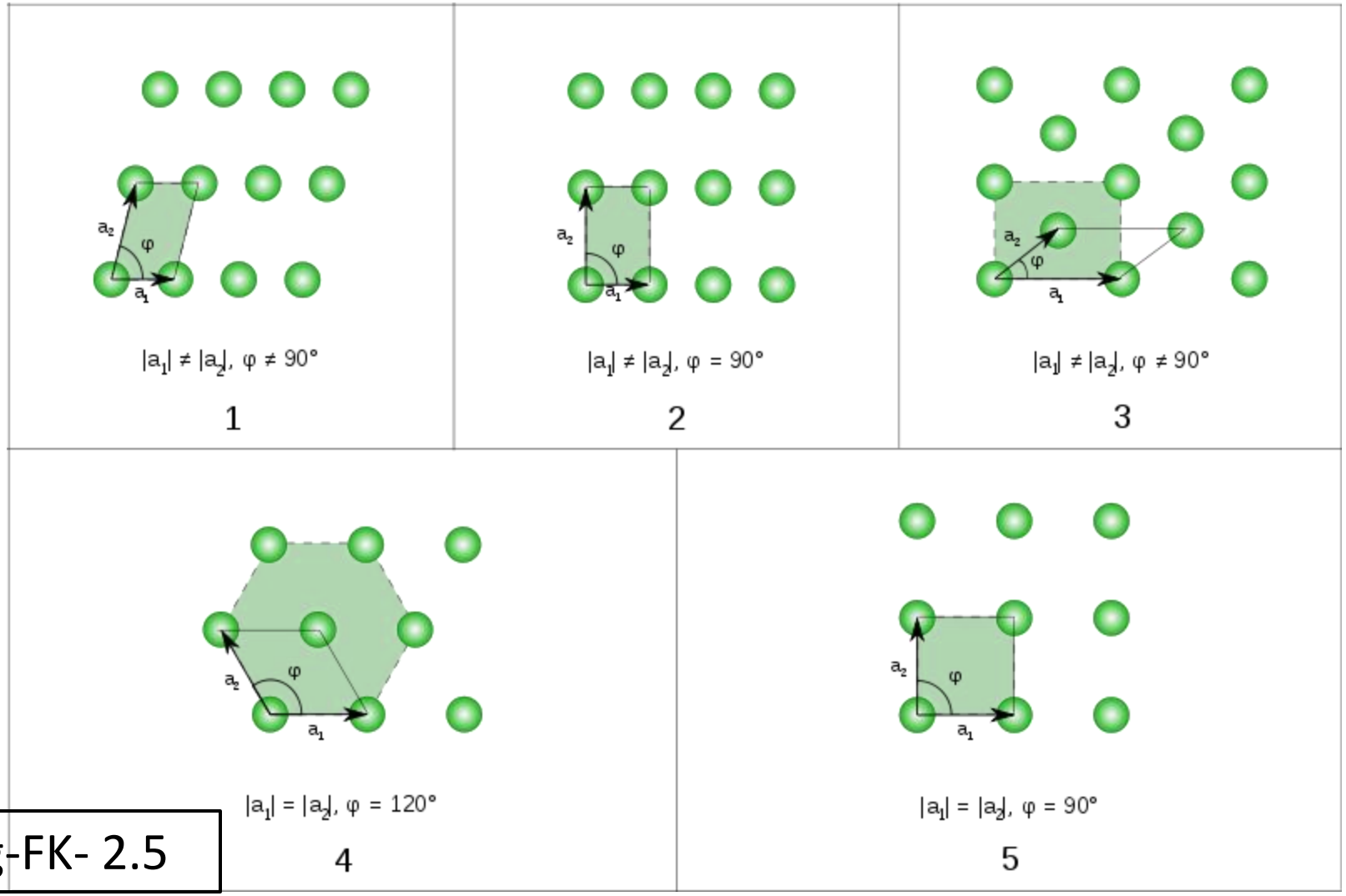


Fig-FK- 2.5

3-dimensionale Bravais-Gitter

7 Kristallsysteme

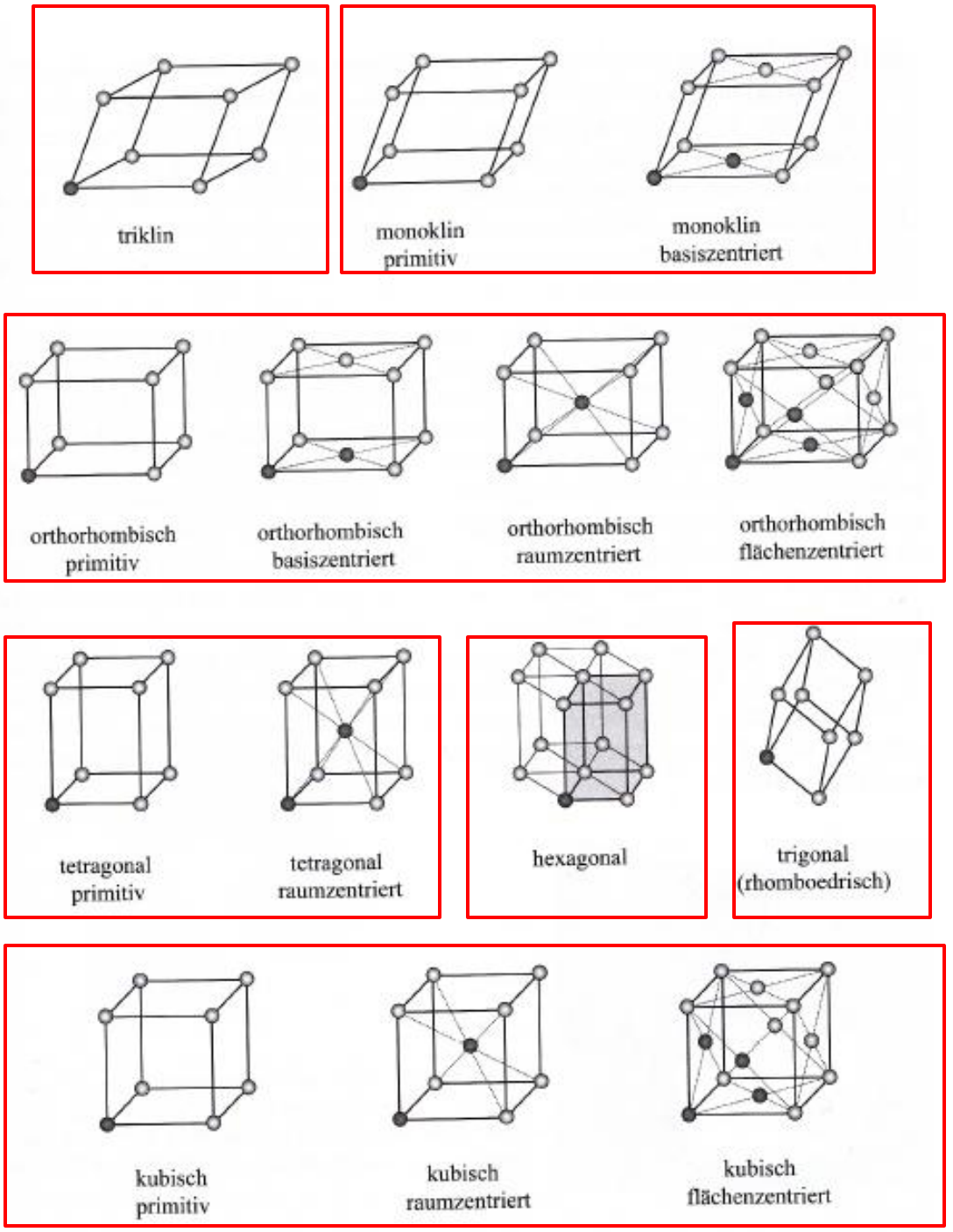
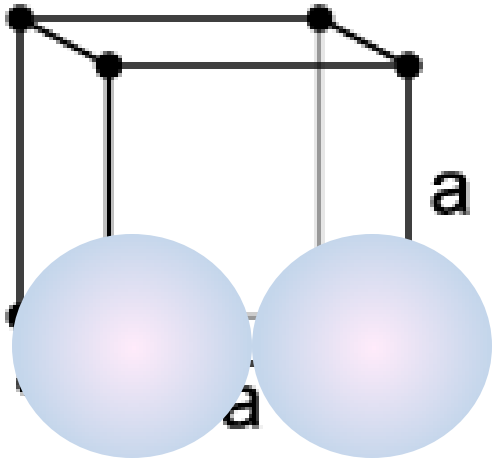


Fig-FK- 2.6

Kubische Kristallgitter

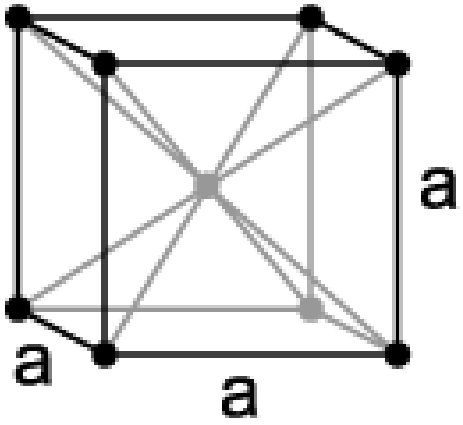
sc



a=2R

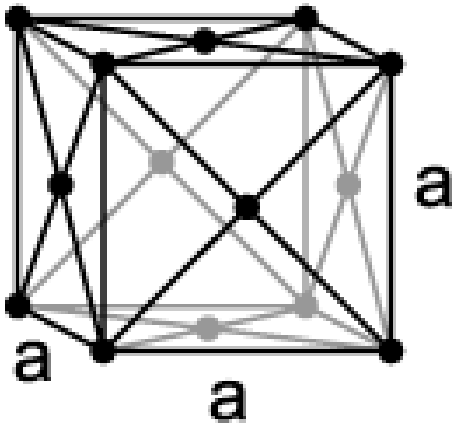
Raumerfüllung:
52%

bcc



Raumerfüllung:
68%

fcc



Raumerfüllung:
74%

Fig-FK- 2.7

Dichteste Packungen:

fcc: ABCABC (111) Ebene

hcp: ABABAB

Hexagonal Dichte Packung (hcp)

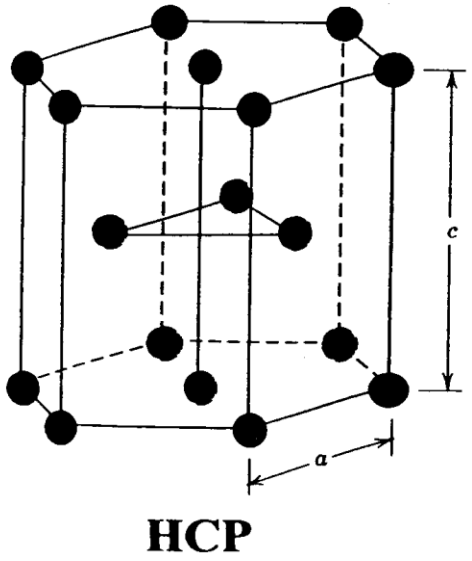
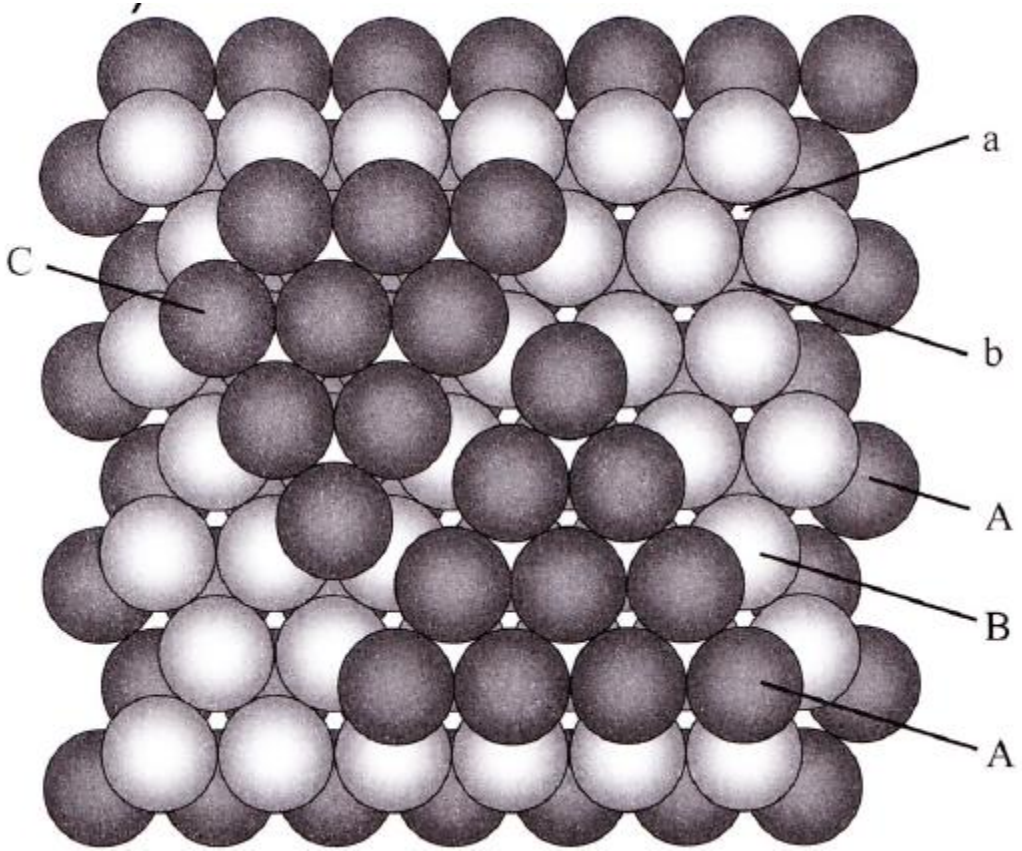
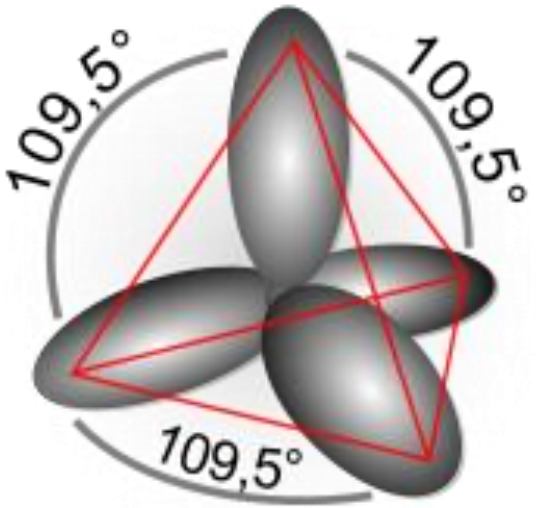


Fig-FK- 2.8



Raumerfüllung: 74%

Diamantstruktur



sp^3
orbitale

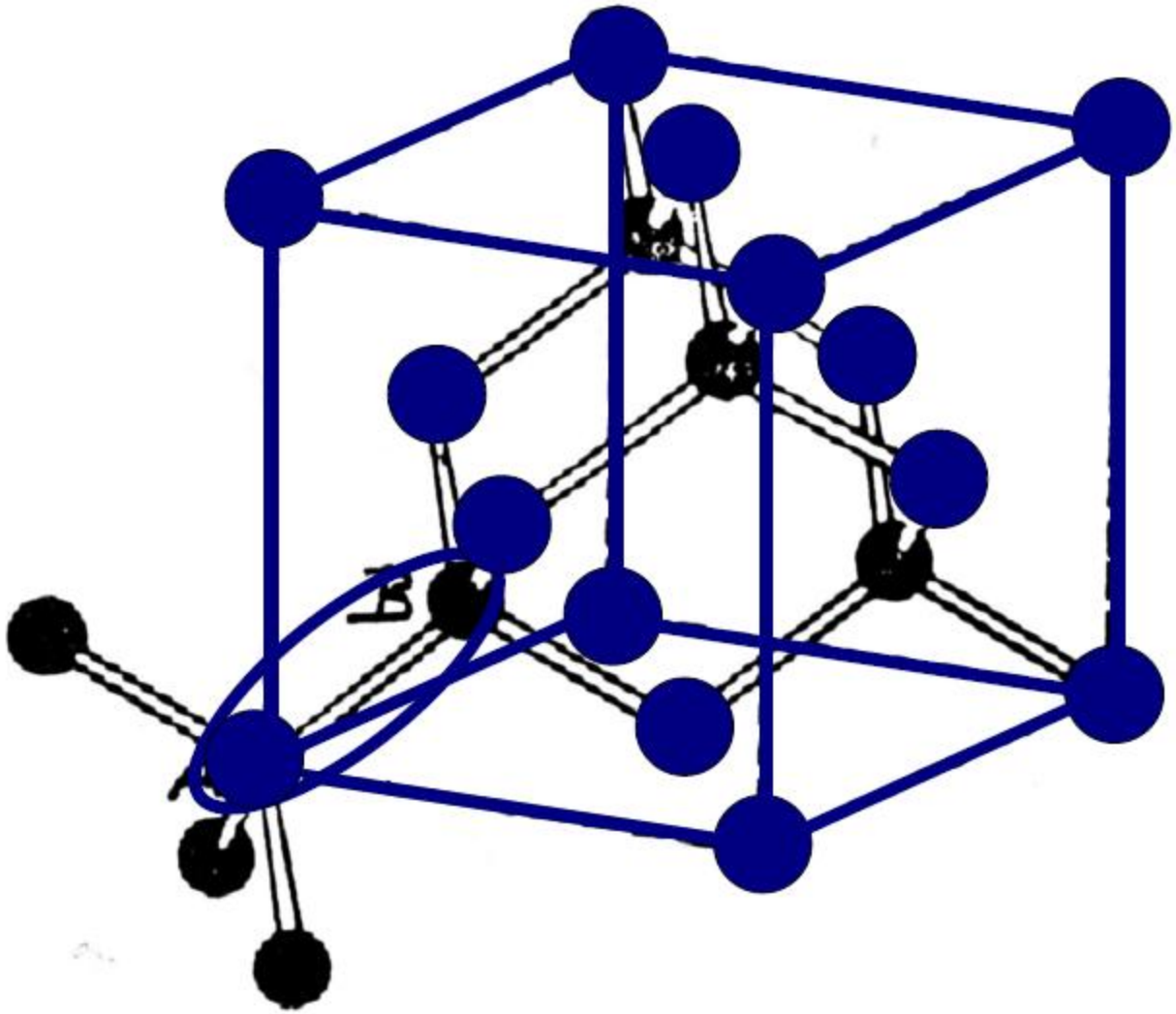


Fig-FK- 2.9

fcc Struktur mit 2-atomiger Basis:
(000) + (¼, ¼, ¼)

Kristallgitter

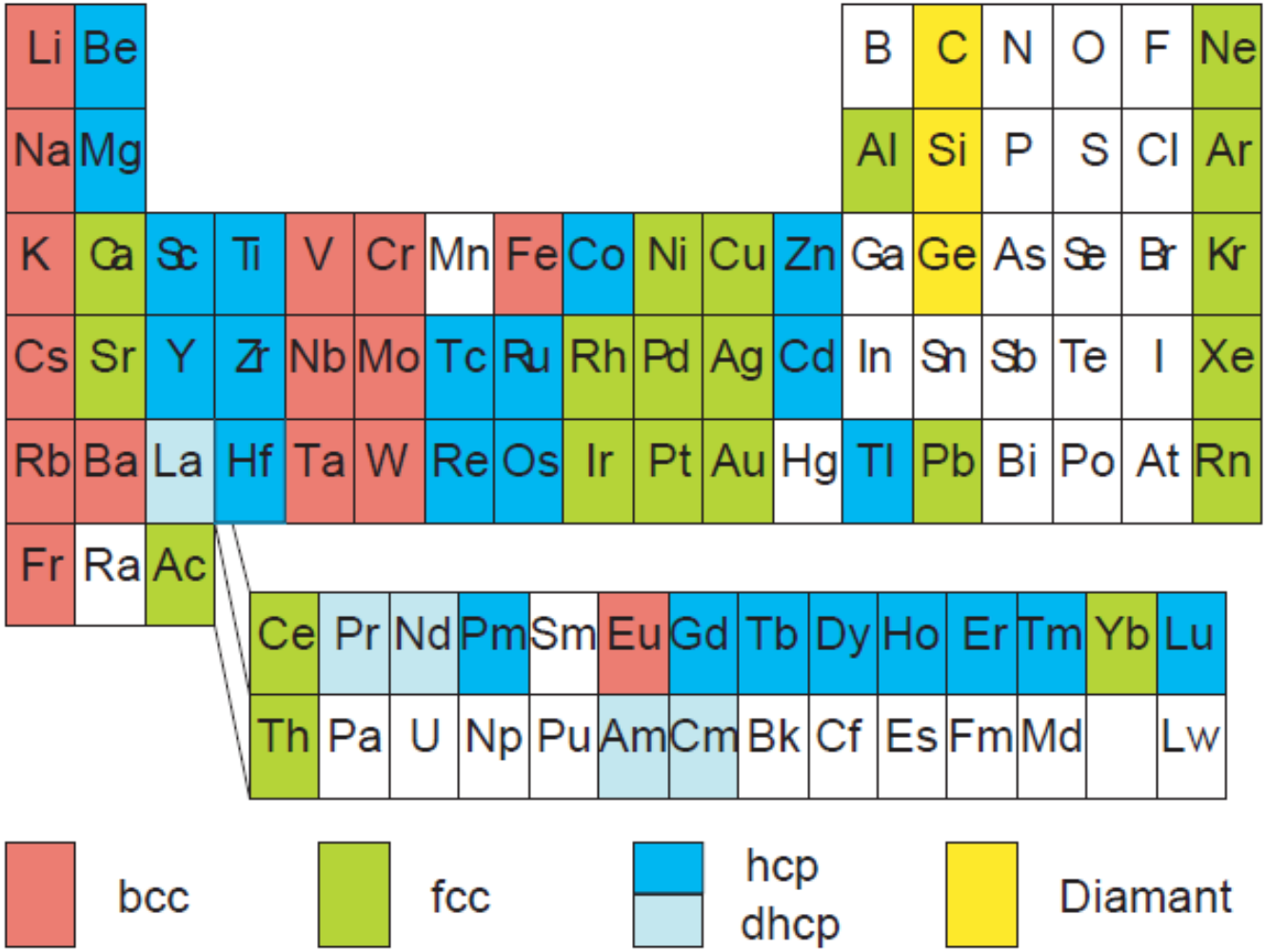
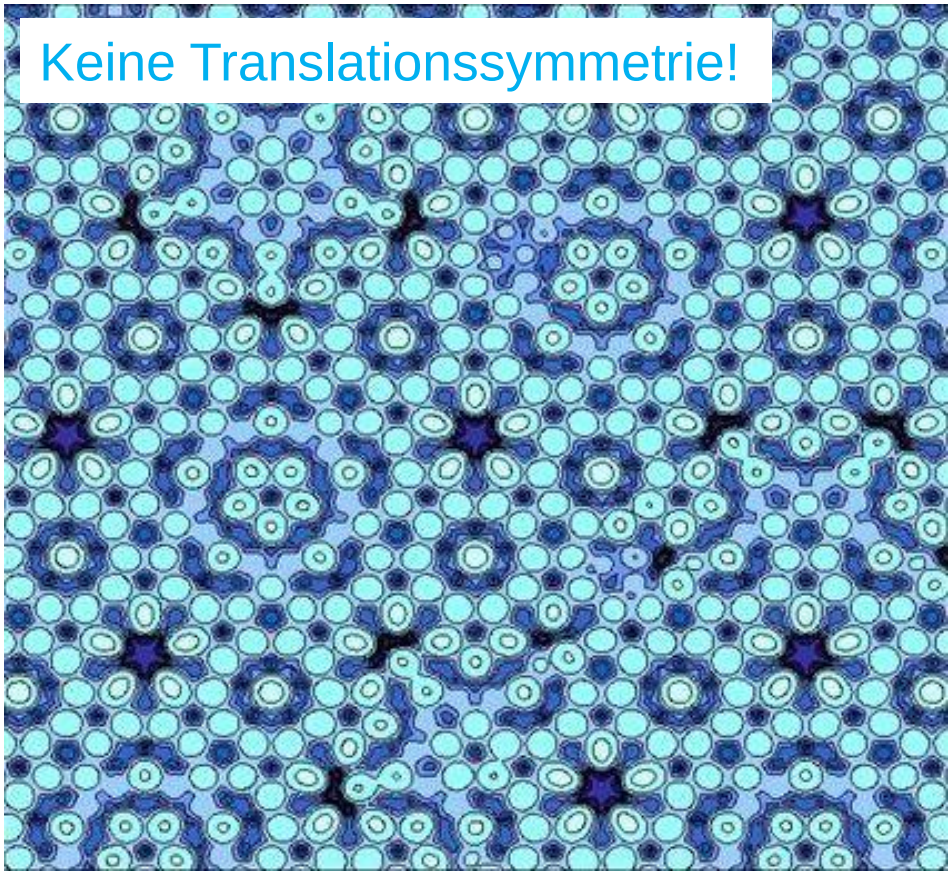
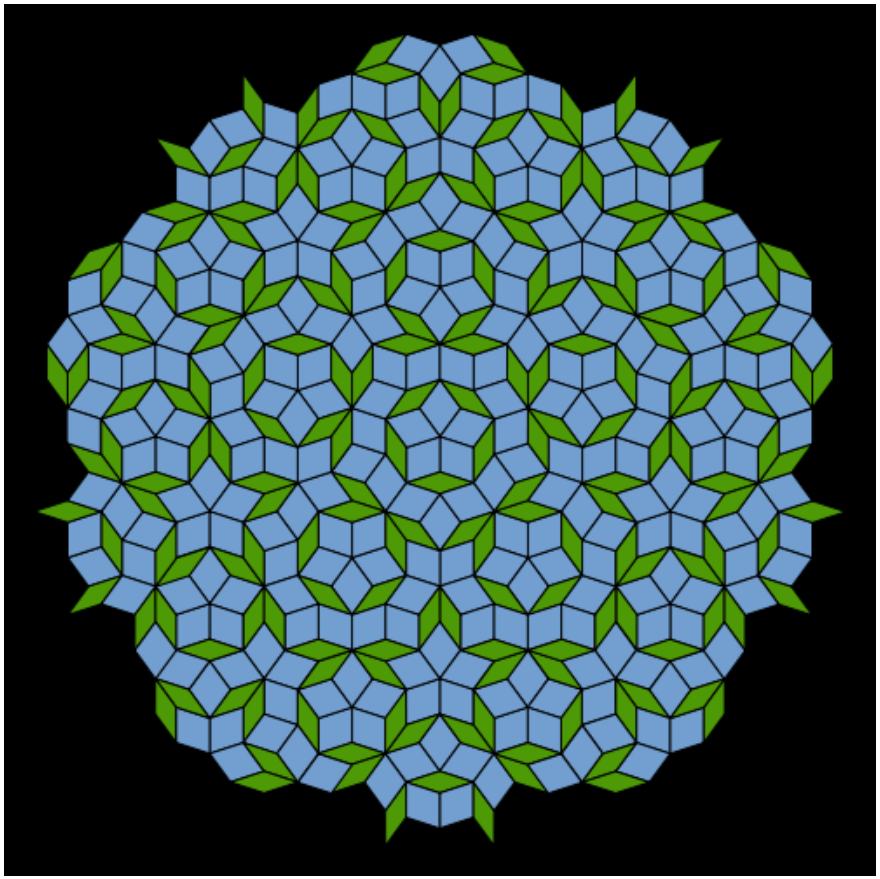


Fig-FK- 2.10

Quasi-Kristalle = quasi periodische Strukuren





Meist tenäre Legierungssysteme:
Bsp: Aluminium, Zink, Cadmium

Penrose Muster

Entdeckt in Al+Mn(14%) Legierung (1984)

Nobelpreis 2011 Chemie
für Dan Shechtman

Fig-FK- 2.10a