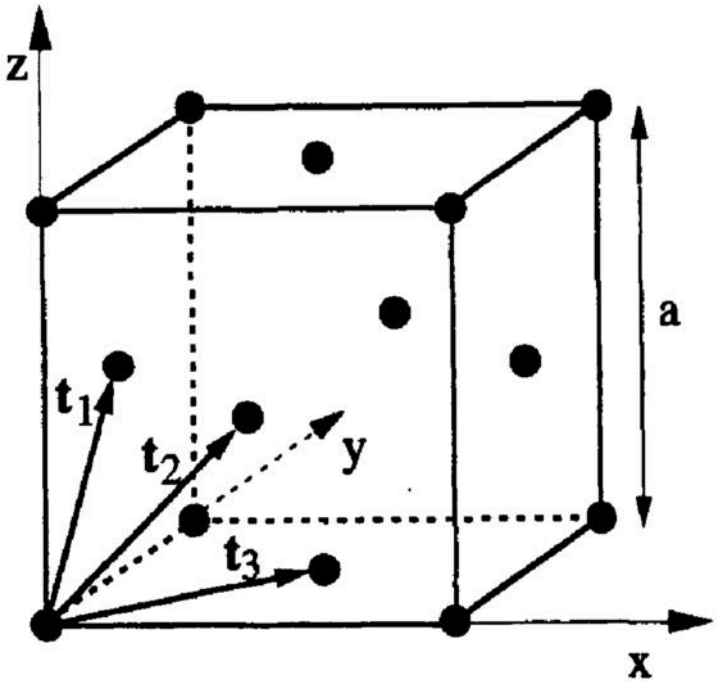
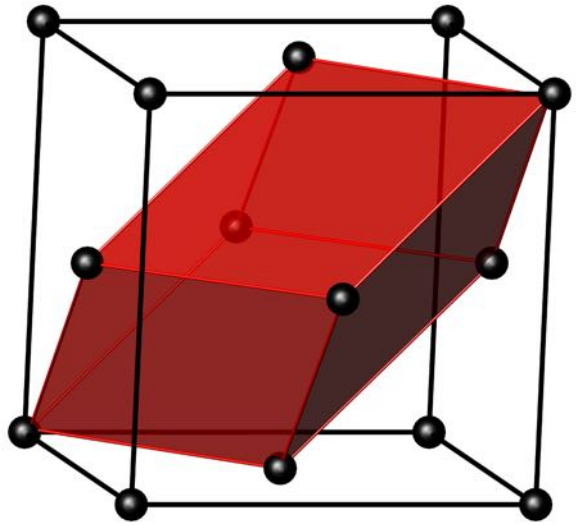
Reticoli Cristallini

Cubico a facce centrate - fcc

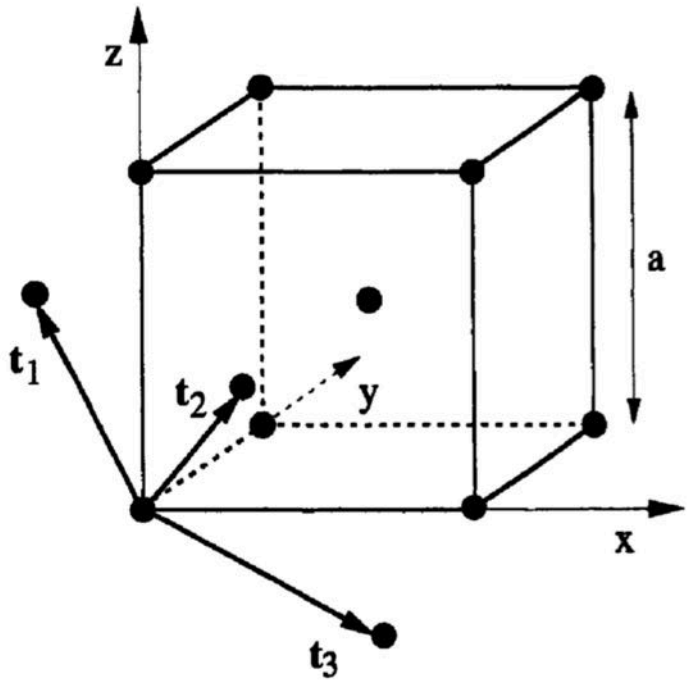


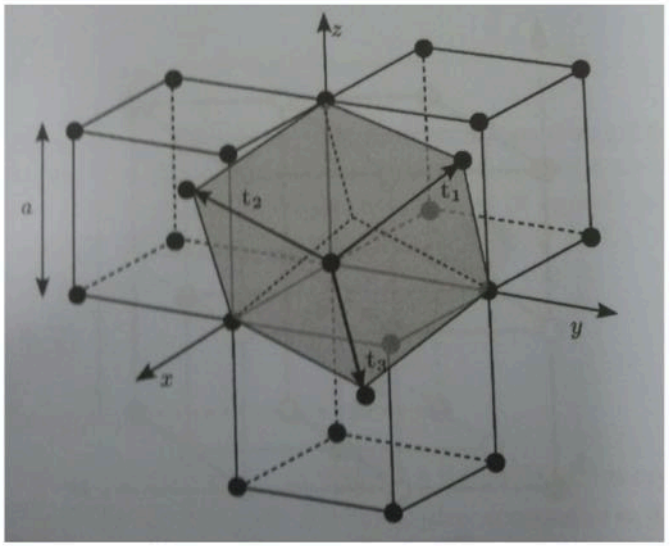


- Solidi di gas rari (Ne, Ar, Kr, Xe)
- Vari metalli (Ag, Al, Au, Cu, Pd, Pt)
- Qualche elemento delle Terre Rare

Crystal	*a* (Å)	Crystal	*a* (Å)	Crystal	*a* (Å)	Crystal	*a* (Å)	Crystal	*a* (Å)
Ar	5.26	Au	4.08	Cu	3.61	Ni	3.52	Pt	3.92
Ag	4.09	Ca	5.58	Kr	5.72	Pb	4.95	Sr	6.08
Al	4.05	β-Co	3.55	Ne	4.43	Pd	3.89	Xe	6.2

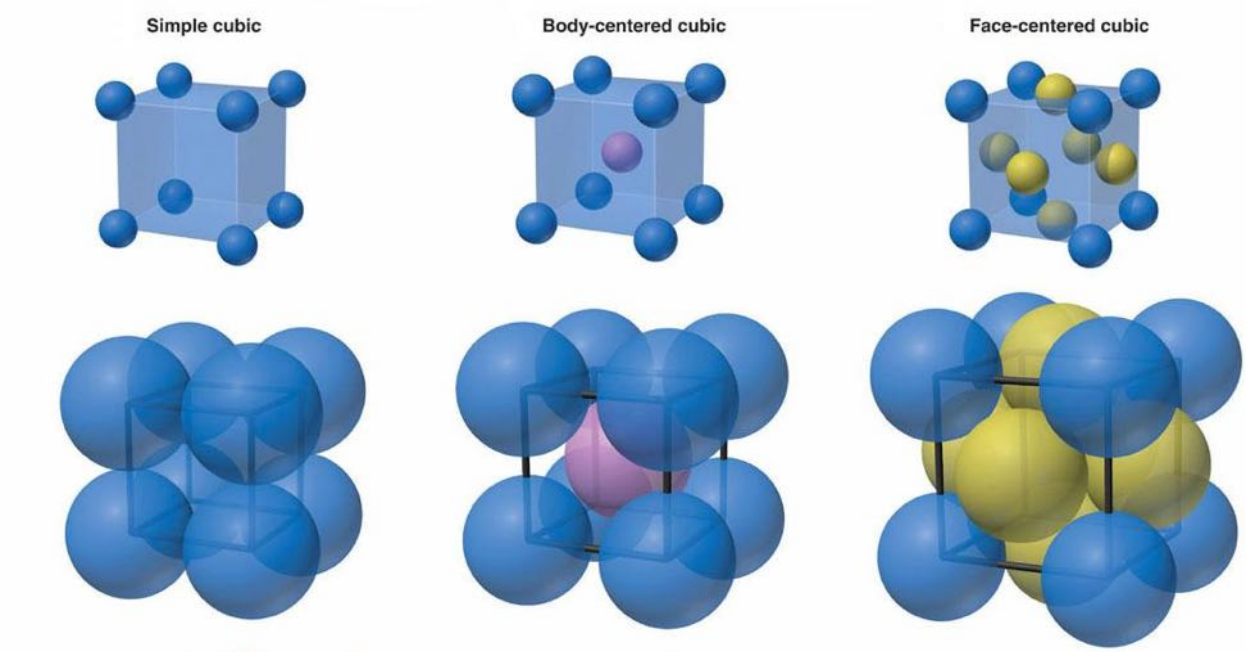
Cubico a corpo centrato - bcc

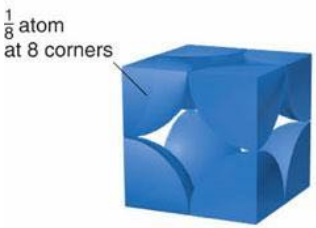




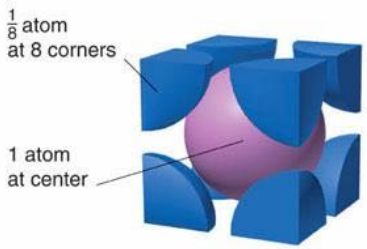
- Metalli alcalini (Li, Na, K, Rb, Cs)
- Altri metalli (Cr, Mo, W, Fe, Ba)

Crystal	*a* (Å)	Crystal	*a* (Å)	Crystal	*a* (Å)	Crystal	*a* (Å)
Ba	5.26	Fe	4.08	Mo	3.61	Rb	3.52
Cr	4.09	K	5.58	Na	5.72	Ta	4.95
Cs	4.05	Li	3.55	Nb	4.43	V	3.92
W	6.08						

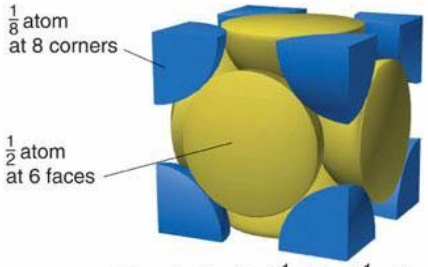




Atoms/unit cell = $\frac{1}{8} \times 8 = 1$

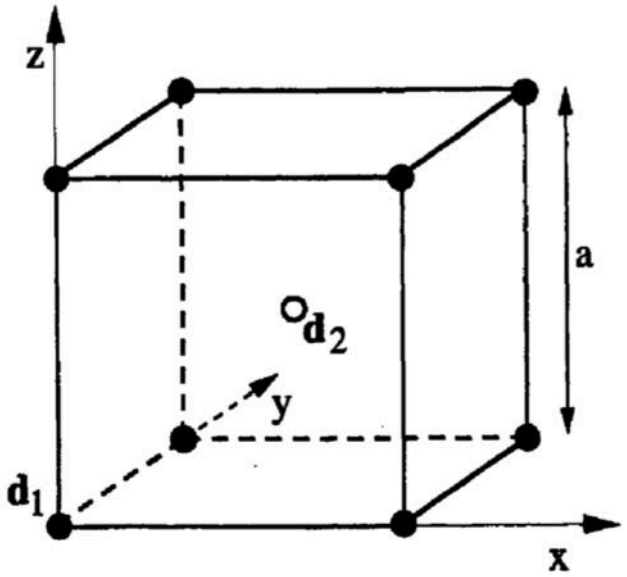


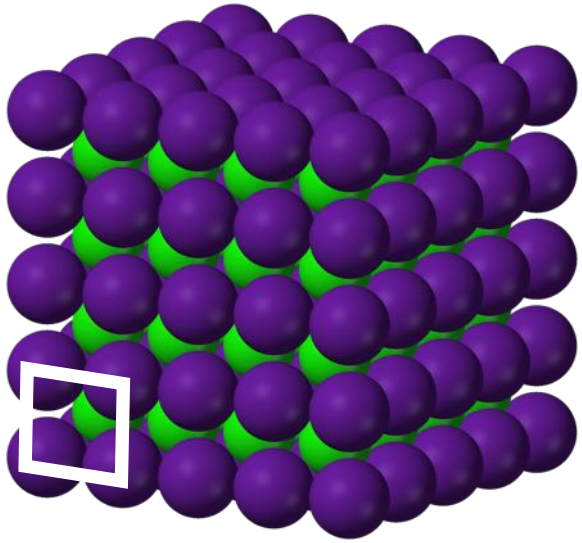
Atoms/unit cell = $(\frac{1}{8} \times 8) + 1 = 2$



Atoms/unit cell = $(\frac{1}{8} \times 8) + (\frac{1}{2} \times 6) = 4$

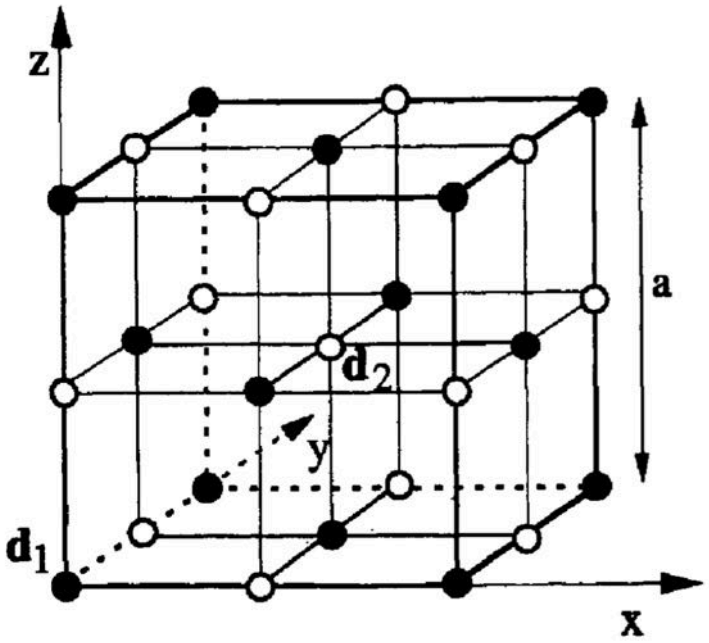
Cloruro di Cesio (CsCl)

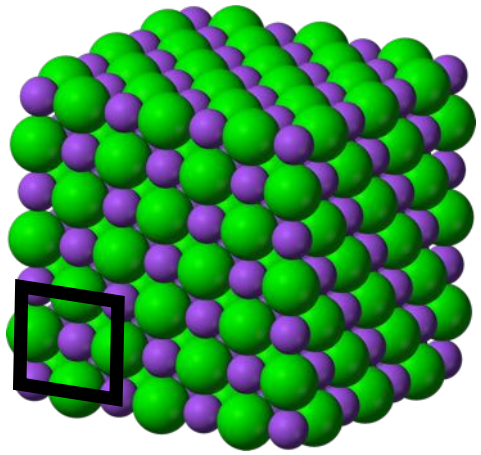




Crystal	a (Å)	Crystal	a (Å)	Crystal	a (Å)
AlNi	2.88	CsCl	4.12	TlCl	3.83
CuZn (β-brass)	2.94	CsBr	4.29	TlBr	3.97
AgMg	3.28	CsI	4.57	TlI	4.20

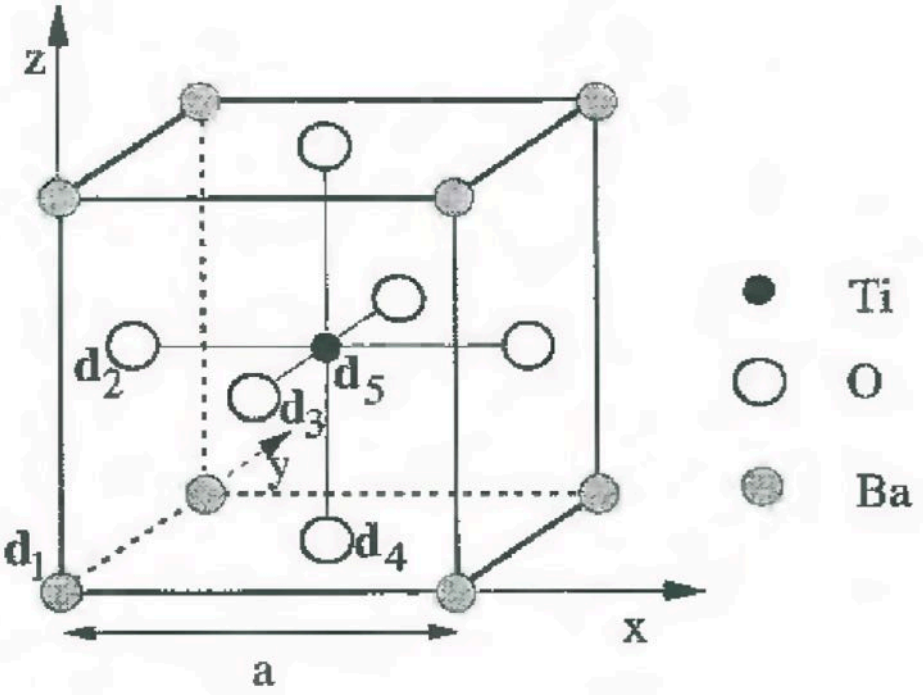
Cloruro di Sodio (NaCl)

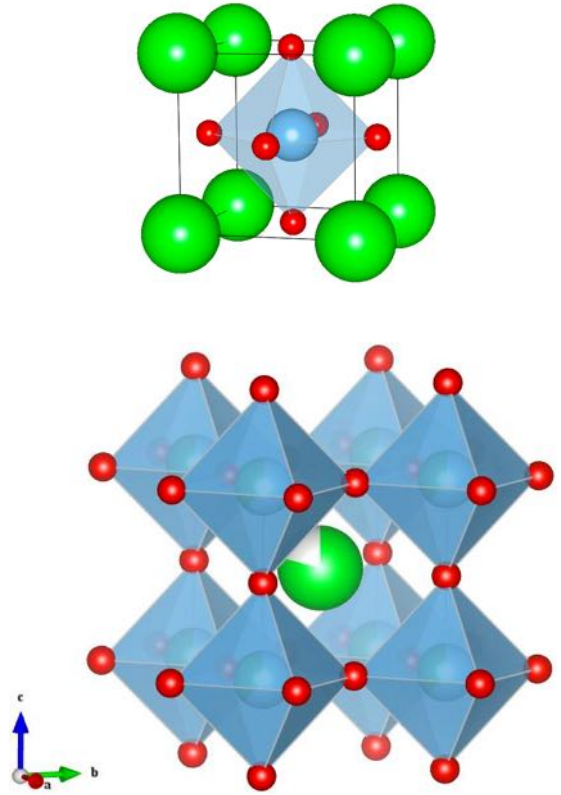




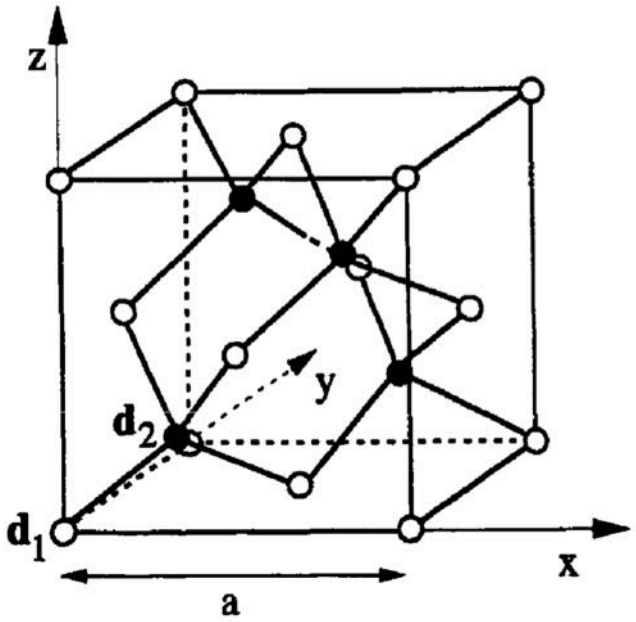
Crystal	*a*(Å)	Crystal	*a* (Å)	Crystal	*a* (Å)
LiF	4.02	KBr	6.60	MgO	4.21
LiBr	5.50	AgBr	5.77	MnO	4.43
NaCl	5.64	AgF	4.92	MgS	5.20
NaI	6.47	CaSe	5.91	PbS	5.92
KCl	6.29	BaO	5.52	SrTe	6.47

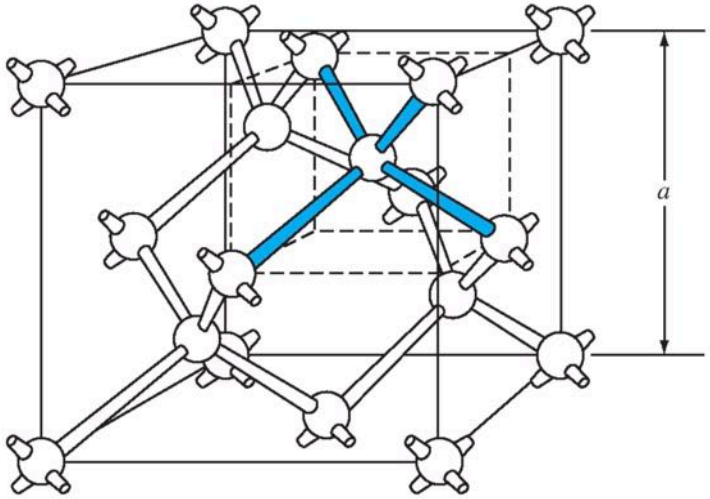
Perovskite – Titanato di Bario ($BaTiO_3$)





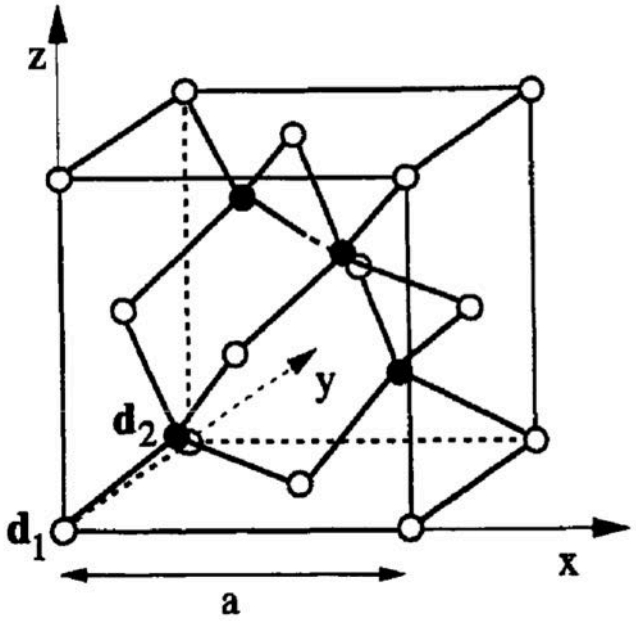
Diamante

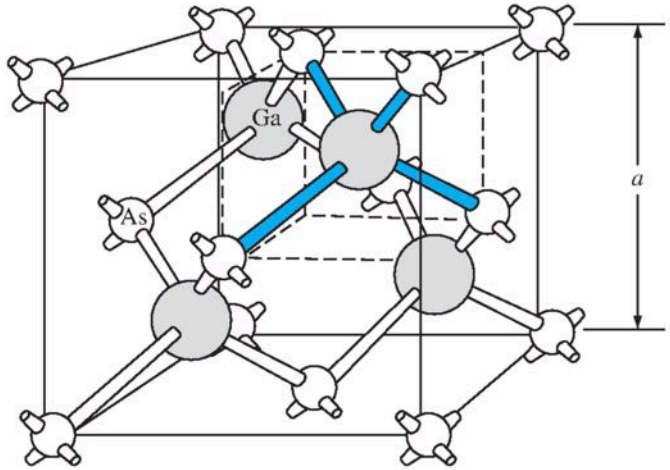




Crystal	a (Å)
C (diamond)	3.57
Si	5.43
Ge	5.66
α-Sn (grey)	6.49

Zincoblenda

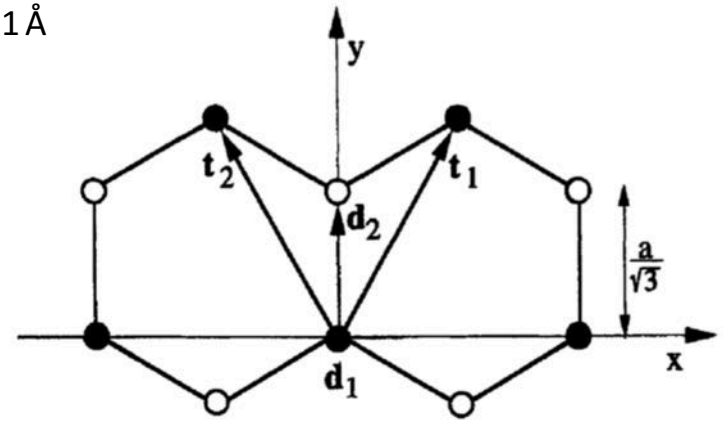


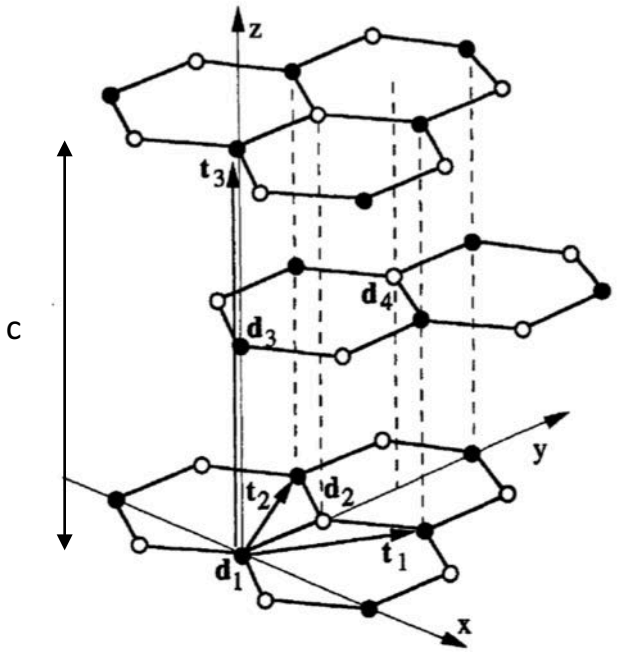


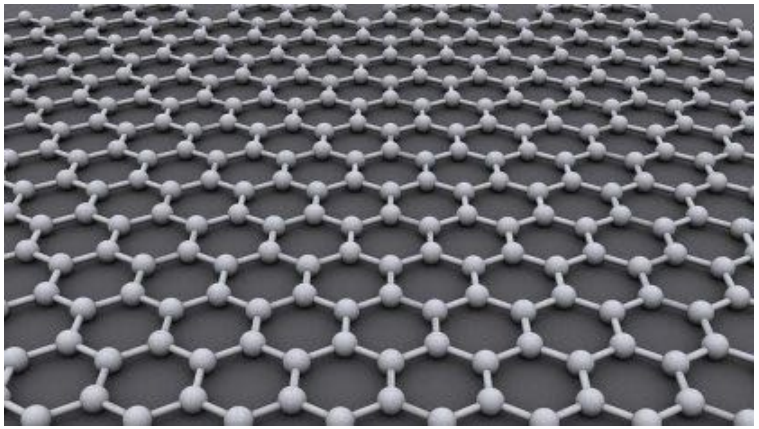
Crystal	*a* (Å)	Crystal	*a* (Å)	Crystal	*a* (Å)
SiC	4.35	AlP	5.45	InAs	6.04
ZnS	5.41	AlAs	5.66	InSb	6.48
ZnSe	5.67	GaAs	5.65	SiC	4.35
MnS (red)	5.60	GaSb	6.12	CuCl	5.41
CdS	5.82	GaP	5.45	CuBr	5.69
CdTe	6.48	AgI	6.47	HgSe	6.08

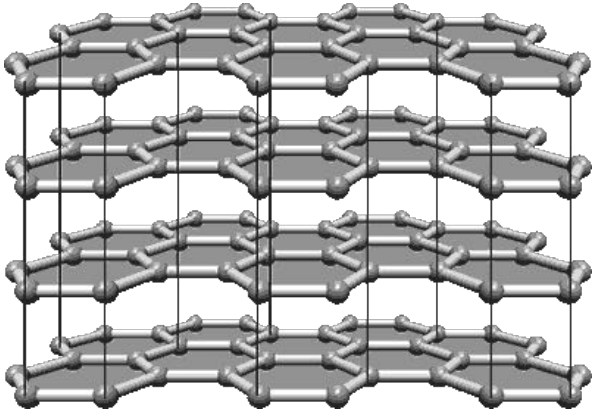
Grafene e Grafite

a = 2.46 Å
c = 6.71 Å

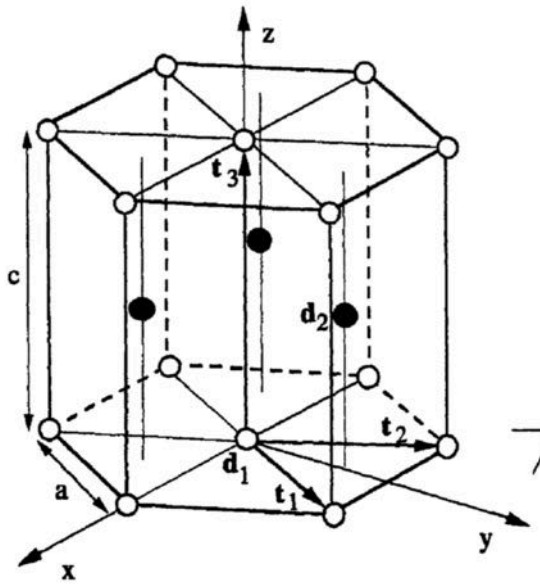


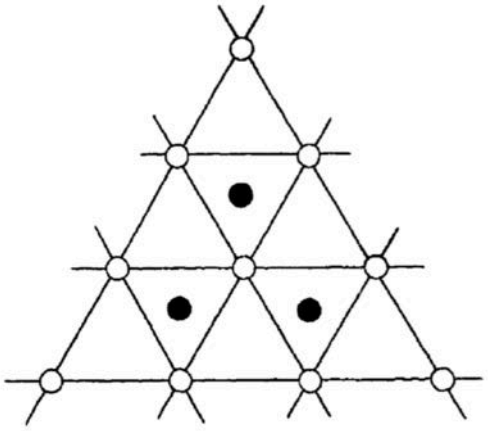




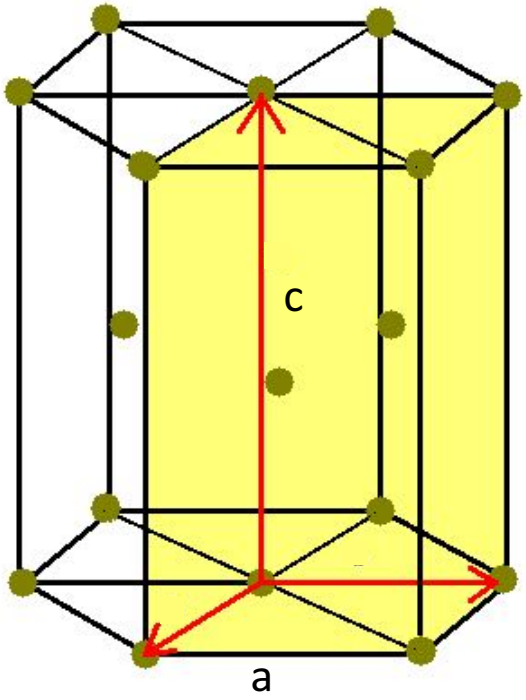


Esagonale compatto (close-packed) - hcp

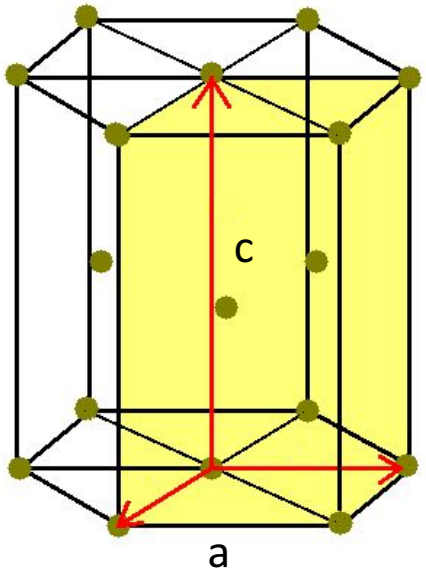




top view



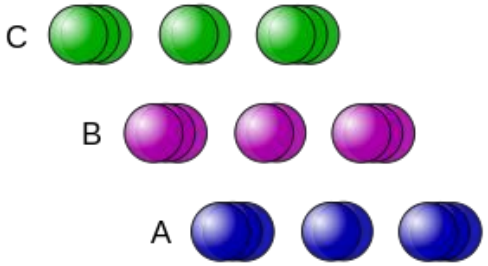
Esagonale compatto (close-packed) - hcp

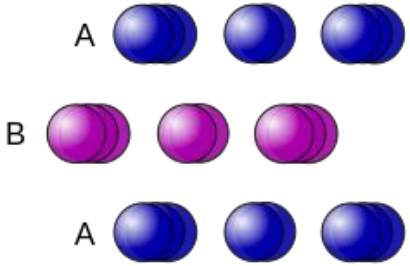


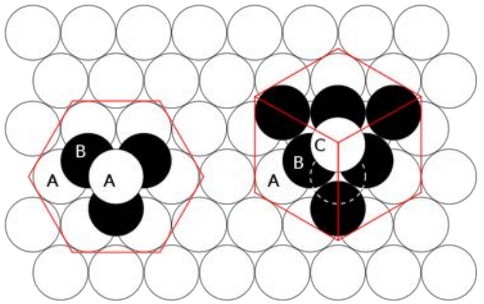
Crystal	*a* (Å)	*c*/*a*	Crystal	*a* (Å)	*c*/*a*
He	3.57	1.63	Mg	3.21	1.62
Be	2.29	1.58	Ti	2.95	1.58
Nd	3.66	1.61	Zr	3.23	1.59
Zn	2.66	1.86	Y	3.65	1.57
Cd	2.98	1.88	Gd	3.64	1.59
α-Co	2.61	1.62	Lu	3.50	1.58

$$\left(\frac{c}{a}\right)_{\text{ideale}} = \sqrt{\frac{8}{3}} \approx 1.633$$

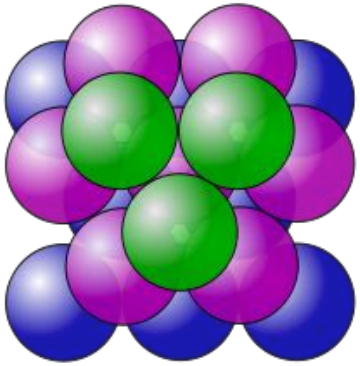
close-packed lattices



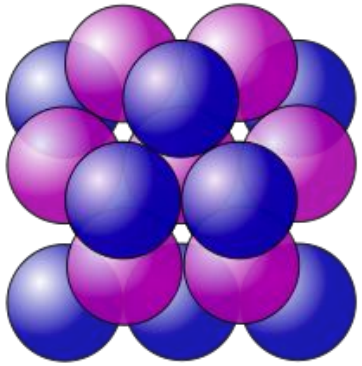




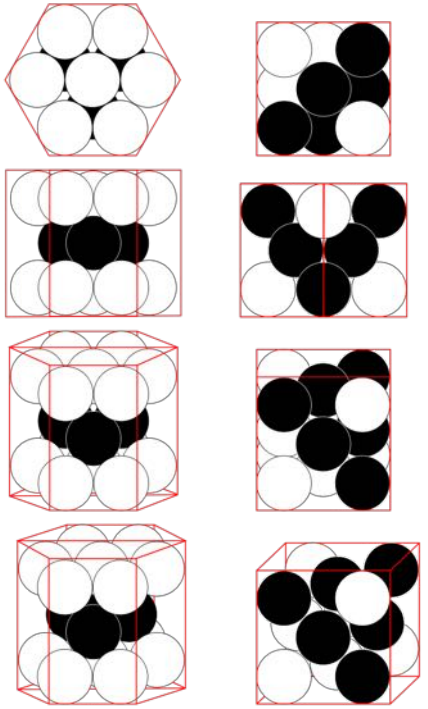
lungo (111)



Cubico a facce centrate ABC



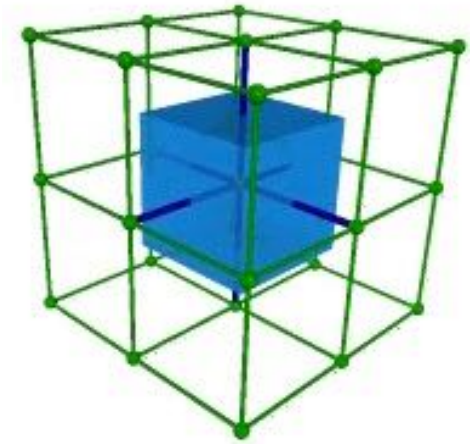
Esagonale compatto ABA



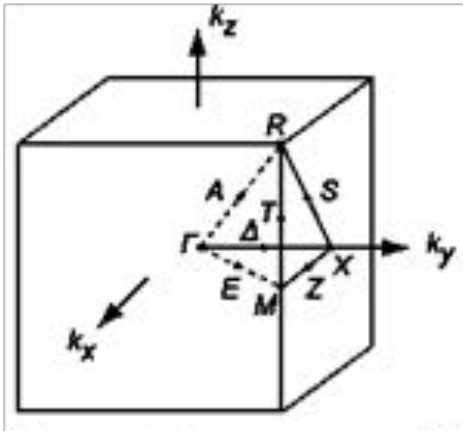
Cella di Wigner-Seitz (WS) e zona di Brillouin (BZ)

Cubico semplice

Reticolo Reale

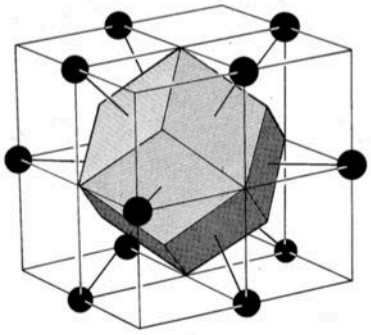


Reticolo Reciproco

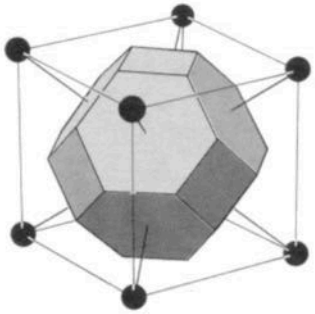


Cella di Wigner-Seitz (WS) e zona di Brillouin (BZ)

Reticolo Reale

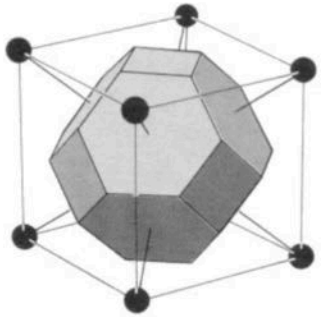


fcc WS
Dodecaedro rombico

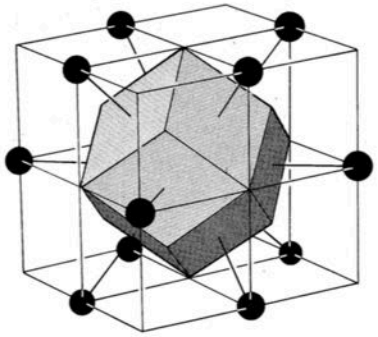


bcc WS
Ottaedro troncato

Reticolo Reciproco

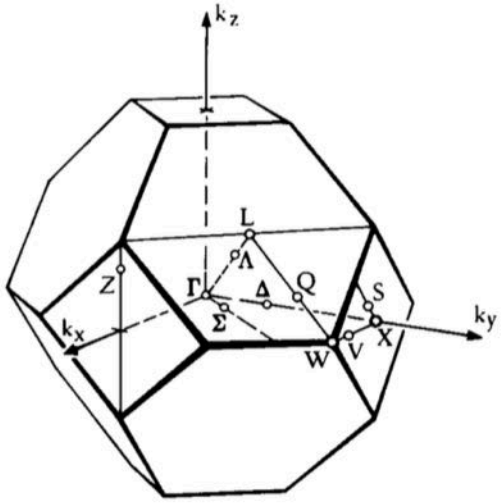


fcc BZ
Ottaedro troncato

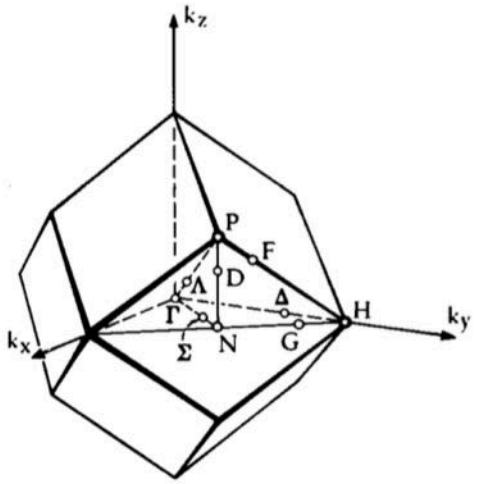


bcc BZ
Dodecaedro rombico

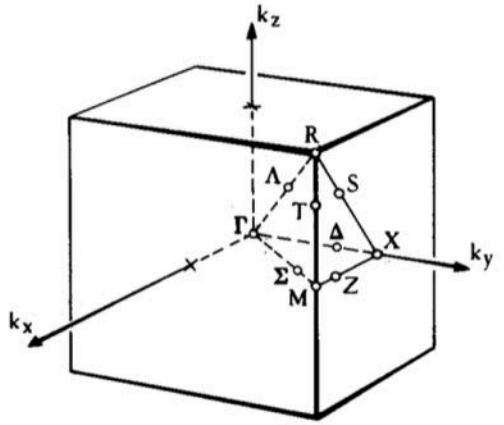
Zone di Brillouin (BZ)



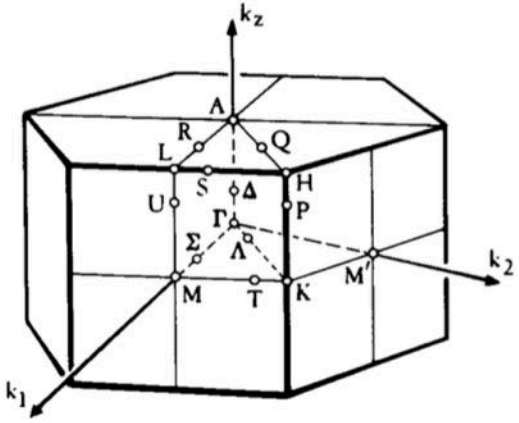
FACE CENTERED CUBIC



BODY CENTERED CUBIC



SIMPLE CUBIC



HEXAGONAL