

Solid State Physics

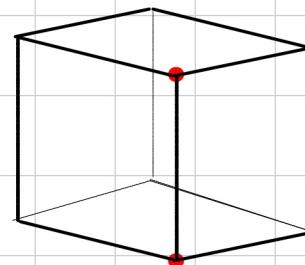
unit cell : volume with which the
without voids or overlaps
May contain any number

primitive (unit) cell : single point inside

Coordination number : number of neig

Some special lattices

SC . simple cubic

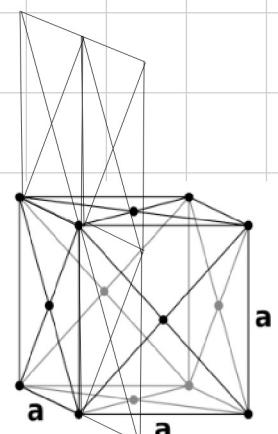


coord

- fcc - cube with lattice points at the corners and in the middle of all faces

coord. # = 12

3 l. planes, 4 points
on each

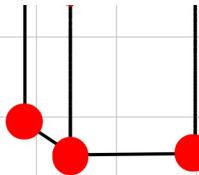
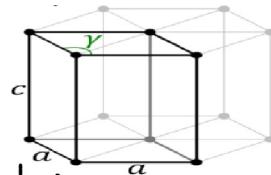


ovl

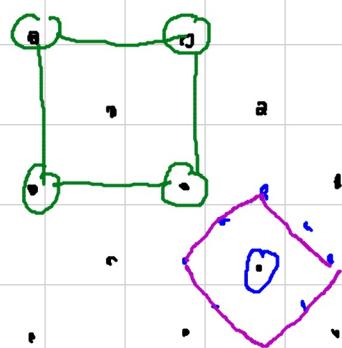
- hcp - not a cubic system

$\gamma = 120^\circ$

hexagonal close packing



1 point / cell \rightarrow primitive
1 point $< N / \text{cell}$ \rightarrow unit



primitive all
Wigner - Seitz

Symmetries

franction

Crystals \rightarrow



mirror plane

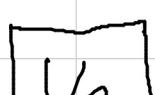
reflection to a point
inversion center

a

i $\uparrow \uparrow m$ rotoinversion

categorization of crys

Bravais lattice



no defects

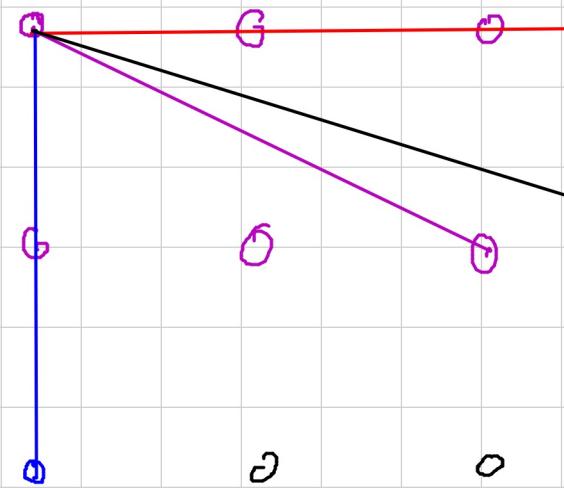
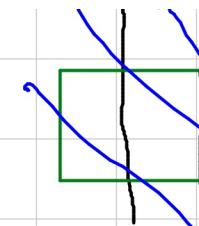
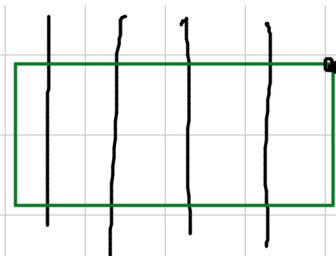
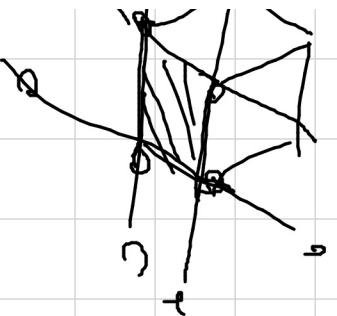
Crystallographic defects

point defects

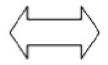
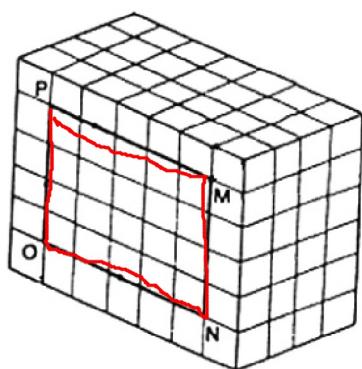
vacancy

the . . .

V_{Ga}



SCREW
dislocation



Bulk defects

EM waves

X