Chapter 4:-

Coppe, steel FCC
Iron BCC

$$n_v = n e^{-Q/RT}$$

$n_v \uparrow$ Temp $\uparrow$

n_v : number of vacancies /cm³

n : ~ . lattice points ✓ atoms /cm³

Q : activation Energy

R : Gas Constant = 1.987 cal/mol.K = 8.314 J/mol.K

T : temprelurc

Schmid's law :- $\tau = \sigma \cos \lambda \cos \phi$

$\tau_r = F_r / A$ ... Resolved shear stress

$\sigma = F / A_0$ ... unidirectional stress applied on the Cylinder
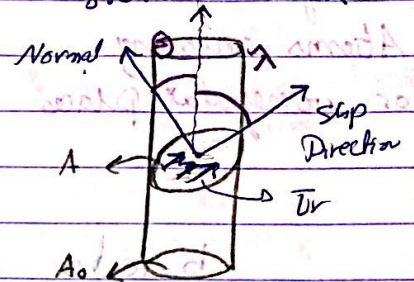
CRSS :   to slip,   CRSS = τ_r

if not make CRSS < τ_r

Hall - Petch equation :-

surfac defects :-
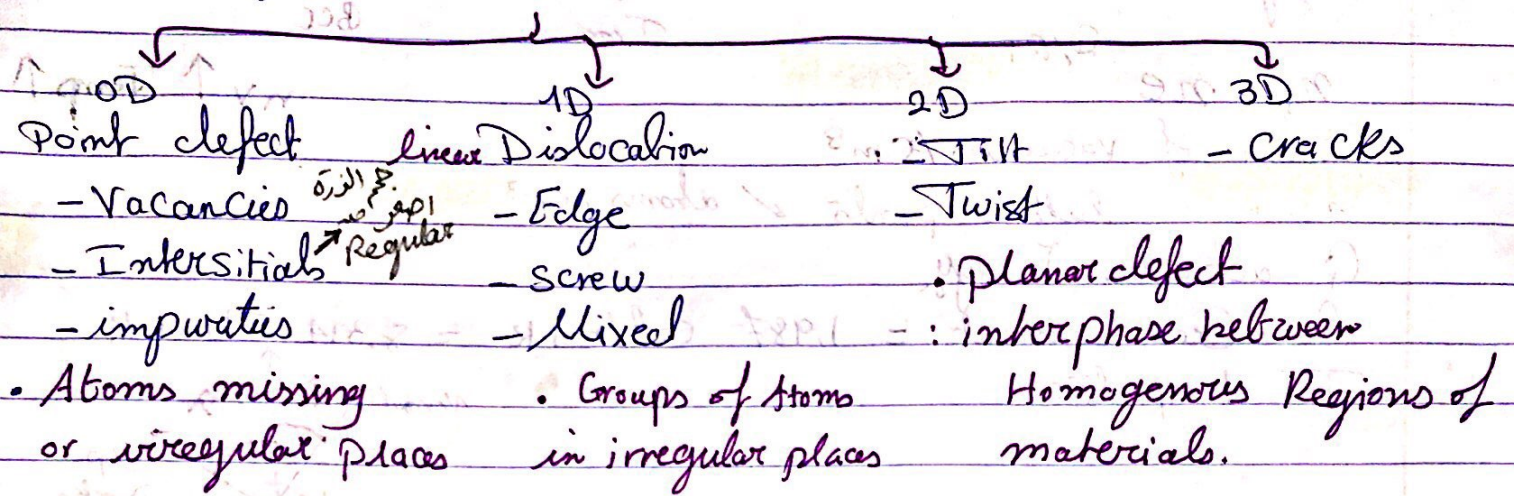
constants

$$\sigma_y = \sigma_0 + K d^{-1/2}$$

yield' strength

↳ average diameter of Grains

Importanc f defects :-

Defect in Solids:

0D	1D	2D	3D
Point defect	linear Dislocation	- Tilt	- cracks
-Vacancies حركة الذرة	- Edge	- Twist	
-Intersitials → Regular	- screw	· Planar defect	
-impurities	- Mixed	- : interphase between	
· Atoms missing or irregular Places	· Groups of atoms in irregular places	Homogenous Regions of materials.	

b-vector : represents the magnitude & direction of the lattice distortion resulting from a dislocation
→ deformation