

Day-28

- Frenkel - AgCl
- Schottky - NaCl
- material + higher order (even 1D) defect
- Anion Frenkel - Anion sublattice

Eg: K₂F → small anion

↓
large
cation

$$K_{AF} = [V_F'] [F_i']$$

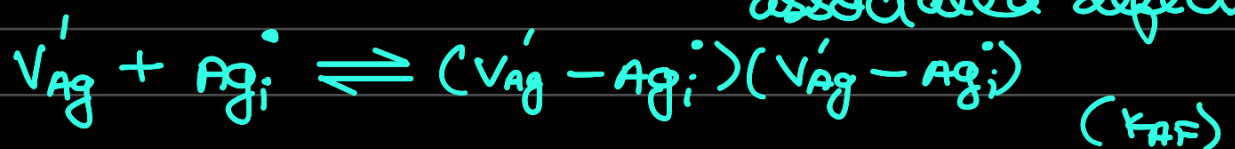
- CCP framework of Cl where Na occupies octahedral voids (describing NaCl)
- Cation and the anion from a surface site : interstitial position
eg: PbO (layered structure with lots of gap in between)

$$K_{AS} = [Pb_i''] [O_i']$$

- F, S, AF, AS : unit ionic defect reactions

- n numbers of V_{Ag}^+ $(V_{Ag}' - V_{Ag}')$

defect cluster/
associated defects



→ Band-to-Band :

$$e'_{CB} \text{ and } h^{\bullet}_{VB} \quad | \quad e^{\times}_{VB} \text{ and } h^{\times}_{CB}$$

$$K_B \propto \exp. \left(-\frac{E_g}{kT} \right)$$

$N_c, N_v \rightarrow$ effective density of states

→ SnO_2 - Transparent conducting oxide in solar cell.

→ Acid-base reaction: No change of valence states.
(all ionic defect)