

Light emitting diodes

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Optoelectronics devices

- ① current \rightarrow light
- ② Light convert to electric current

Luminescent devices

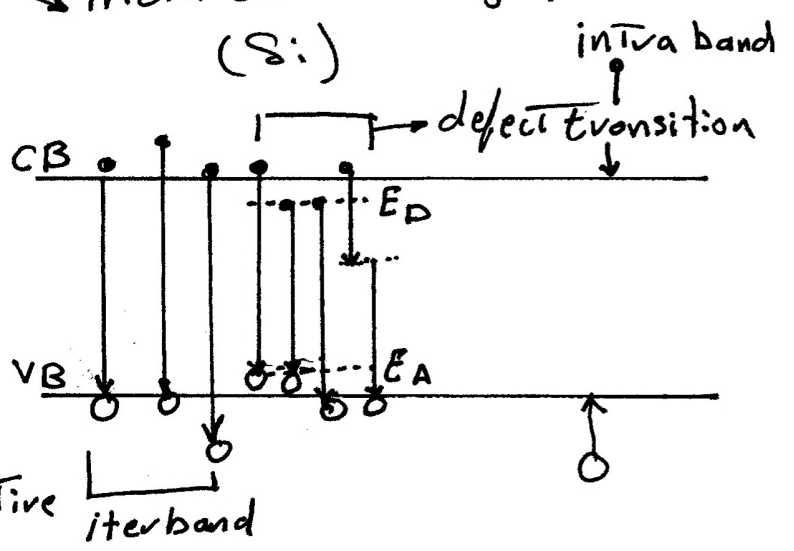
Luminescent optical emission ~~emission~~ due to electronic excitation

- ① Photo luminescence \rightarrow optical means
- ② cathodo luminescence \rightarrow e^- beam
- ③ Radio luminescence \rightarrow Ionizing Radiation
- ④ electro luminescence \rightarrow electric field - EHP
electron - Hole - pair (EL)

LED

Semiconductor \rightarrow direct band gap GaAs
 \rightarrow indirect band gap (Si)

- (EL) \rightarrow 190%
- PN Junction 1949
- GaAs based, 1960
- LED



Some of the Radiative interband

We should maximize the Radiative Transition