

Physics Courses

V A P E N A T I O N

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Chapter 1

Semiconductors

1.1 Defintions

- Conductors : Cu, Fe, Au, etc...
- Insulators : wood, earth, plastic, glass, etc...
- Semiconductors : Si, Ge, Se, AsGa

Orders of magnitude:

- For conductors, conductivity is $10^2 - 10^6 S.m^{-1}$
- For semiconductors, conductivity is $10^{-6} - 10^2 S.m^{-1}$
- For insulators, conductivity is $10^{-16} - 10^{-6} S.m^{-1}$

Conductivity of semiconductors depends on the impurities in the material, their cristal structure, other intrinsic features and on temperature.

Binding domain for e^- *SCHEMA*

- Remember that energy of an electron in an electric field E is given by $\epsilon_{e-} = -eE$
- If $E > -E_{ext}$ then the enregy of e^- becomes positive and e^- can "move".
- We can measure the current if electrons move in an ordered way, *ie: in the "same" orientation*
- If temperature is high, some e^- are excited. Eg: Fe, Tungstene
- There is a link between temperature and colors

SCHEMA