

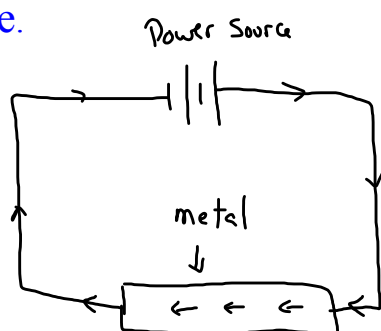
Electrical Conductivity: pg 220

electricity: flow of electrons

→ Good conductors allow electrons to flow easily through it.

Metals:

- structure: free electron model
- application of electrical current causes electrons to enter a metal sample. Repulsion causes electrons to move away and eventually exit the sample.



Ionic Compounds:

- can conduct in molten (liquid) state or when dissolved in water.
- In a solid state, electrons are localized within the ions. [not free]

See pg 221.

- When aqueous or molten, ions are free to move and act as electron carriers between electrodes.

Molecular Compounds:

- have localized electrons
- cannot act as electron carriers
- acids are an exception
- graphite is another exception (delocalized e's between layers).

Electrolytes: compounds capable
of conducting electricity in solution.

Non-electrolytes: do not conduct electricity
in solution.

Thermal Conductivity

- how well heat passes through a substance.
- particles must be able to move and collide to transfer energy.

Metals:

- electrons are free in metals and are very light.
- changes in temp. cause significant changes in particle speed.
- more collisions = faster heat transfer

Ionic Compounds:

- particles are locked in the crystal lattice structure.
- poor ability to transfer heat because particles can't move & collide.

Molecular Compounds:

- poor thermal conductors
- molecules are large compared to free metal electrons. They move slowly and collide less frequently.