12/5/12

Chem 1210 Final Review

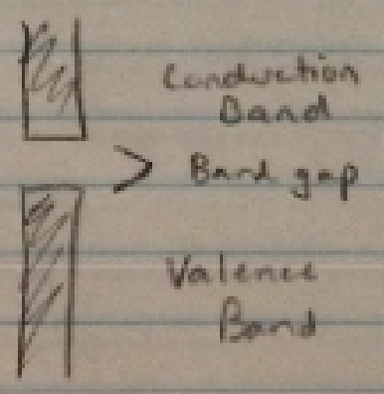
Ionic Cmpd → Metal + Non-metal
- High Melting + Boiling Pts.

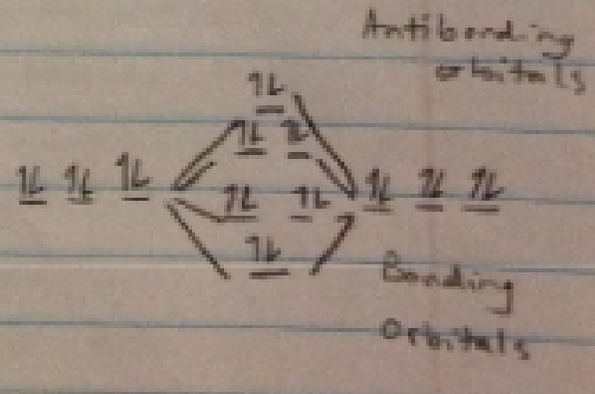
Metallic Bond
- "Sea of electrons"
- Conductor → e^- move freely
- Melting points due to filling of bonding - anti-bonding orbital
  - Anti-bonding not as stable
  - Increases, hits climax, decreases for melting point as more across periodic table

★ CsCl, NaCl, ZnS } Need to know structures

Primitive Cubic, BCC, and FCC
- Know atoms in cubic structure, empirical formula, density

Conductors, Semi-conductors, insulators

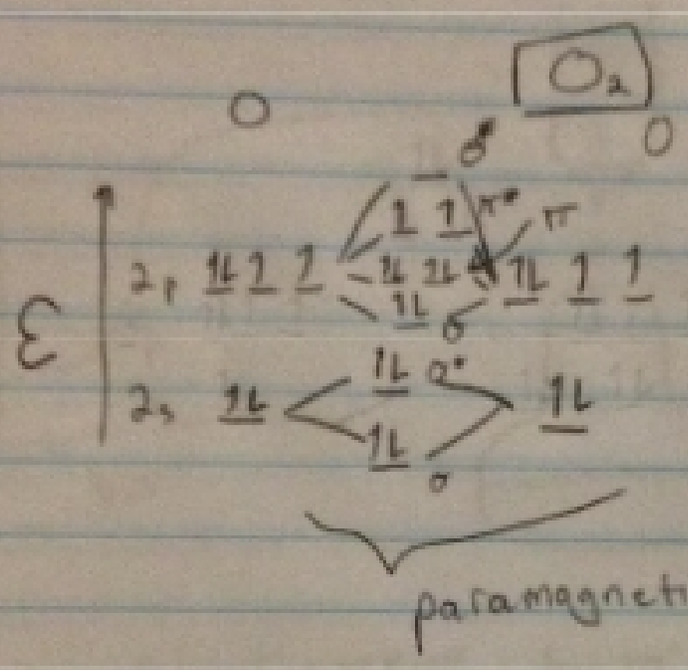




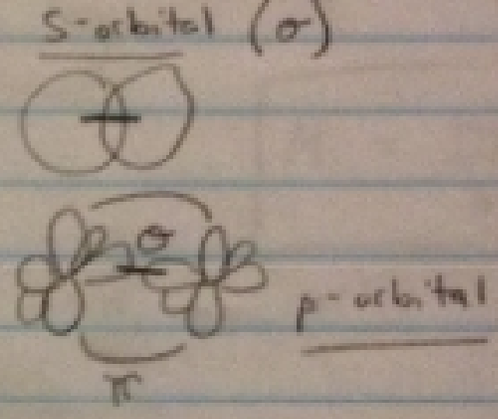
Doping - Crystal structure replaced with other atoms, which changes # of atoms
- Add more e^-, filling conduction band (n-type)
- Add atom w/ less e^-, valence not completely filled (p-type)

Molecular Orbital Theory

- Explains Magnetism and Bond Strength/Length
- Based on orbital overlap during bonding
  - e^- move throughout overlapping orbitals



paramagnetic (unpaired e^-)



Bond Order

$$\text{Bond Order} = \frac{\#e^- \text{ in bonding} - \#e^- \text{ in antibonding}}{2}$$

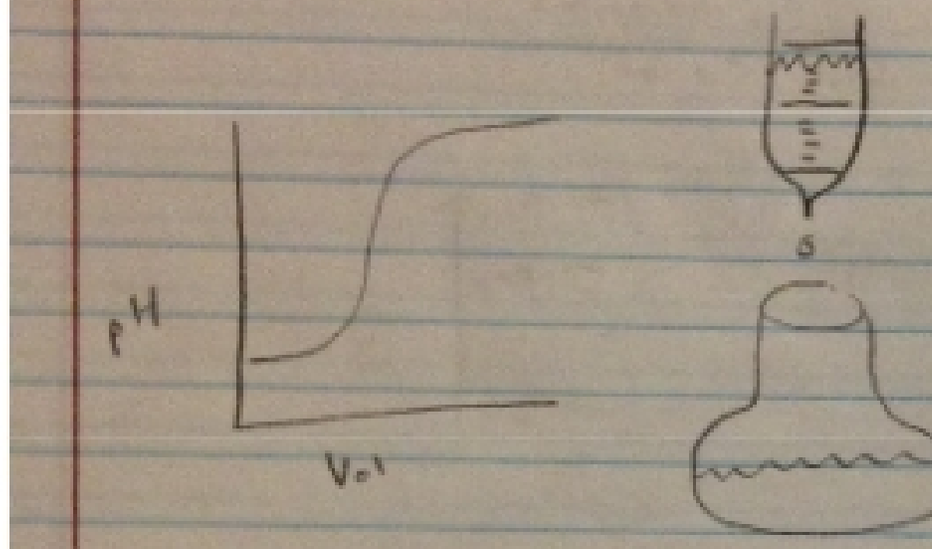
$O_2 \rightarrow \frac{8-4}{2} = 2$

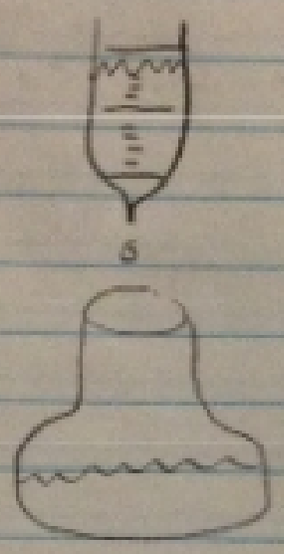
Acid - Base Titrations

★ End Point

↳ Mol Acid = Mol Base

(mol H^+) = (mol OH^-)





Known Concentration Base (0.8755 mol NaOH)

10.00mL acid

Unknown Concentration

$$M = \frac{mol}{L}$$

Example) $\frac{0.9755 \text{ mol NaOH}}{1 \text{ L}} \times \frac{1 \text{ mol } OH^-}{1 \text{ mol NaOH}} \times 0.01450 \text{ L} = 0.01269 \text{ mol } OH^- \times \boxed{\frac{1 \text{ mol } H^+}{1 \text{ mol } OH^-}}$ ← End Point

$$M = \frac{0.01269 \text{ mol } H^+}{0.0100 \text{ L}} = \boxed{1.269 \text{ M}}$$

Don't Forget

- Nomenclature
- Start beginning, work way through chapters in book

Quantum Mechanics

Electron acts as wave and particle

$$\boxed{\varepsilon = \frac{hc}{\lambda}}$$

h = Planck's constant
c = speed of light
λ = wavelength
ε = energy