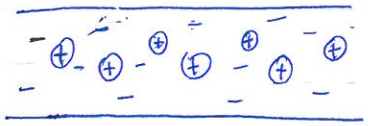
11/17/10

p201 **7.3 Bonding in Metals**

Metals: closely packed cations surrounded by a "sea of e⁻"
e⁻ move freely from one nucleus (cation) to another.



Metallic bonds: attraction of free floating e⁻ to metal cation

Why are metals ductile & malleable but ionic cmpds brittle?
(See transparency) The mobility of the e⁻ in metals allow "buffering" between the cations thus reducing repulsion.

CRYSTALLINE STRUCTURE OF METALS

-See transparency (not a big deal)

★ **ALLOYS** - mixture of 2 or more metals
Why make them? Allow to manipulate characteristics.

Sterling silver: more durable + harder (but still can shape it) than pure silver
92.5% Ag 7.5% Cu

Bronze: 7 parts Cu to 1 part Sn (Tin)
harder than copper & more easily cast.

See p. 203 for % of diff alloys.
vary components & % for purpose: ductility, corrosion resistance, durability.

Transparency?

↳ **Substitutional alloys:** components about the same size so can substitute in crystal

Interstitial: one much smaller & can fit inside spaces between the larger atoms