**IN CLASS # 1**

1. The atomic radii of body-centered cubic (BCC) Fe and face-centered cubic (FCC) Fe are 1.241 Å and 1.269 Å. Calculate the lattice parameters of both BCC and FCC Fe.
2. Calculate the interplanar spacing between the (111) planes of gold (Au) whose lattice parameter is 4.0786 Å. If Cr radiation (λ=1.291 Å) is used to determine this Au sample, what will be the diffraction angle (2θ)?
3. Atomic radius of copper (Cu) is 0.128 nm. The crystal structure of Cu is face-centered cubic (FCC). Its atomic mas is 63.5 g/mol. Calculate the theoretical density of Cu.

(For comparison: experimental real density of Cu is 8.94 g/cm3).

1. Draw the following directions and planes in a unit cell.

[0], [111], [110], [120]

(0), (001), (101), (0)