Name_____ H. Chem, Period _____

# *Ionic Radius*

1. What happens to the size of an ion when a metal loses electrons and why? Explain with full sentences and draw an example.

2. What happens to the size of an ion when a nonmetal gains electrons and why? Explain with full sentences and draw an example.

3. Circle the elements from each pair below that have a SMALLER radius.

   a. Cu vs. $Cu^{3+}$
   b. I vs. $I^{1-}$
   c. $O^{2-}$ vs. O
   d. Ni vs. $Ni^{4+}$
   e. $Ni^{2+}$ vs. $Ni^{4+}$
   f. $Cl^{1-}$ vs. Cl
   g. $Cl^{1-}$ vs. $Cl^{1+}$
   h. Rb vs. $Rb^{1+}$
   i. Ra vs. Zr
   j. P vs. S
   k. Ca vs. $Ca^{2+}$
   l. $C^{4+}$ vs. $C^{4-}$

4. Based on their positions in the periodic table, list the following ions in order of increasing radius: $K^{+}$, $Ca^{2+}$, $Al^{3+}$, $Si^{4+}$. _____

5. List the following ions in order of increasing radius: $Br^{-}$, $Li^{+}$, $Te^{2-}$, $Mg^{2+}$ _____

6. The ionic radii of the ions $S^{2-}$, $Cl^{-}$, and $K^{+}$ are 184, 181, 138 pm respectively. Explain why these ions have different sizes even though they contain the same number of electrons.