

Honors Chemistry: Atomic Theory 7-9 Problem Set- Periodic Trends

1. List the following atoms in order of increasing electronegativity:

a. Cr, Ni, Kr, Ga, K

b. P, As, F, Hg, Fr

2. List the following atoms in order of increasing atomic radius:

c. Cr, Ni, Kr, Ga, K

d. P, As, F, Hg, Fr

3. List the following atoms in order of increasing ionization energy:

e. Cr, Ni, Kr, Ga, K

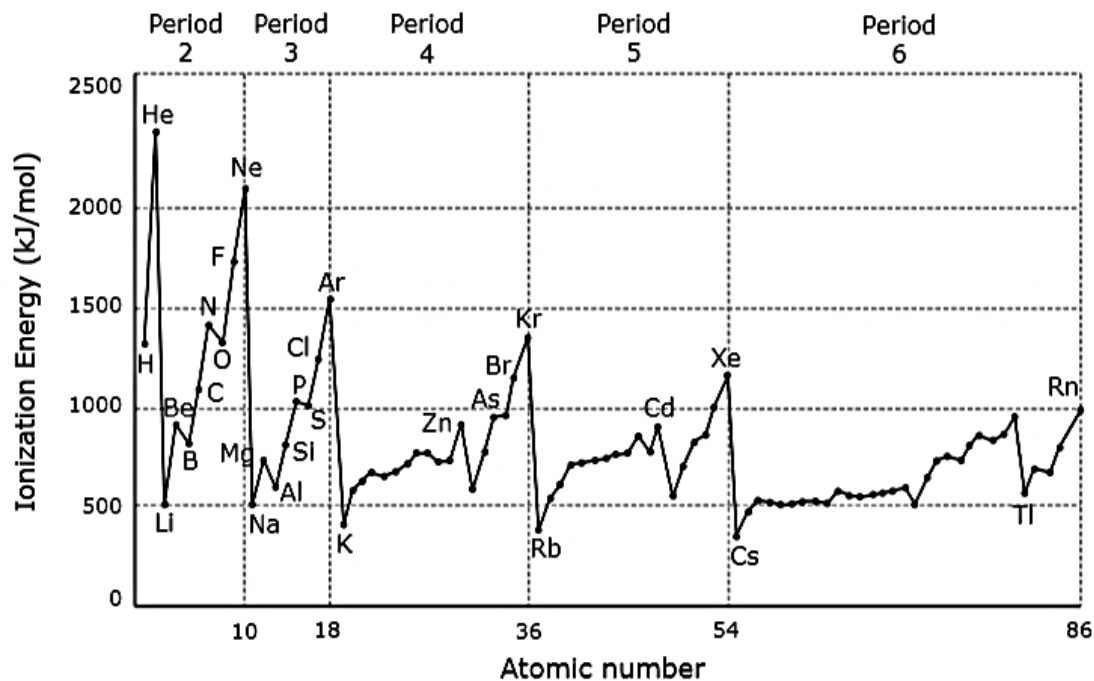
f. P, As, F, Hg, Fr

4. Rank the following species in order of size from largest to smallest: Al^{3+} , F^- , Mg^{2+} , N^{3-} , Na^+ , Ne , O^{2-}

5. The Mg^{+2} , and the Na^{+1} ions each have ten electrons surrounding the nucleus. Which ion would you expect to have the smaller radius?

6. In general, is “effective shielding” most evident going across a period or down a family? How can you tell?

The following questions refer to the following graph:



7. Describe the trends for the IE_1 values graphed in the second period of the periodic table (i.e., Li-Ne). Include each element in your answer and be sure to discuss any apparent deviations in the trend.

8. How would you compare the IE_1 for elements on the left side of the periodic table to those on the right side? Justify your answer.

9. How would you compare the IE_1 for elements at the bottom of a group to those at the top? Justify your answer.