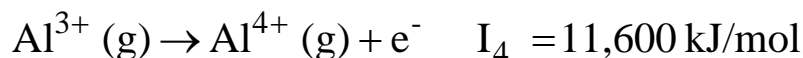
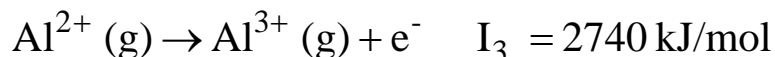
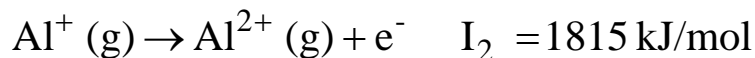
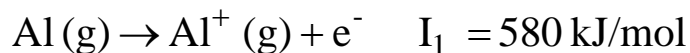


Introduction to Natural Science, Winter 2007
Chemistry Workshop – Week 5

- Determine the periodic trends for the following and give explanations for the observed behavior.
 - atomic radii as you go across a period
 - atomic radii as you go down a group
 - ionization energy as you go down a group
 - electron affinity as you go down a group
- Draw an appropriate graph to show the trend in ionization energy as you go across the second and third periods (leave out the transition elements). Give explanations for the observed behavior
- Arrange the atoms given in parenthesis in the order of
 - Increasing size (K, Br, Ni)
 - Increasing first ionization energy (Ba, Si, F)
 - Increasing first ionization energy (N, O, F)
- The first ionization energies of As and Se are 0.947 and 0.941 MJ/mol, respectively. Rationalize these values in terms of their electron configurations.
- For each of the following pairs of elements pick the atom with
(C and N) **(Ar and Br)**
 - more favorable (exothermic) electron affinity
 - higher ionization energy
 - larger size
- Write equations corresponding to the following.
 - The fourth ionization energy of Se
 - The electron affinity of S⁻
 - The ionization energy of Mg
- Consider the following ionization energies for aluminum:



- Account for the trend in the values of the ionization energies.
- Explain the large increase between I₃ and I₄.
- Which one of the four ions has the greatest electron affinity? Explain.
- List the four aluminum ions given in order of increasing size and explain your ordering.