

## 8.1 Outline

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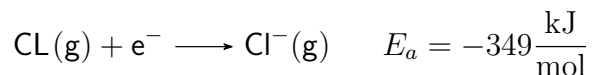
## 8.2 Trends in First Ionization Energies

- As one goes down a group, less energy is required to remove the first electron.
  - For atoms in the same group,  $Z_{eff}$  is essentially the same, but the valence electrons are farther from than ...
- Generally, as one goes across a row/period, it becomes more difficult to remove an electron.
  - As you go from left to right  $\rightarrow Z_{eff}$  increases!

Account for the decrease in ionization energy in going from nitrogen (N) to oxygen (O) despite the increase in effective nuclear charge ( $Z_{eff}$ ).

## 8.3 Electron Affinity

Electron affinity is the energy change accompanying the addition of an electron to a gaseous atom:



Energy is typically released when an electron is added to a gaseous atom. The process is said to be **exothermic**, so the energy has a negative sign associated with it.

The electron affinity of lithium is a negative value, whereas the electron affinity of Beryllium is a positive value. Use electron configuration to account for this observation.