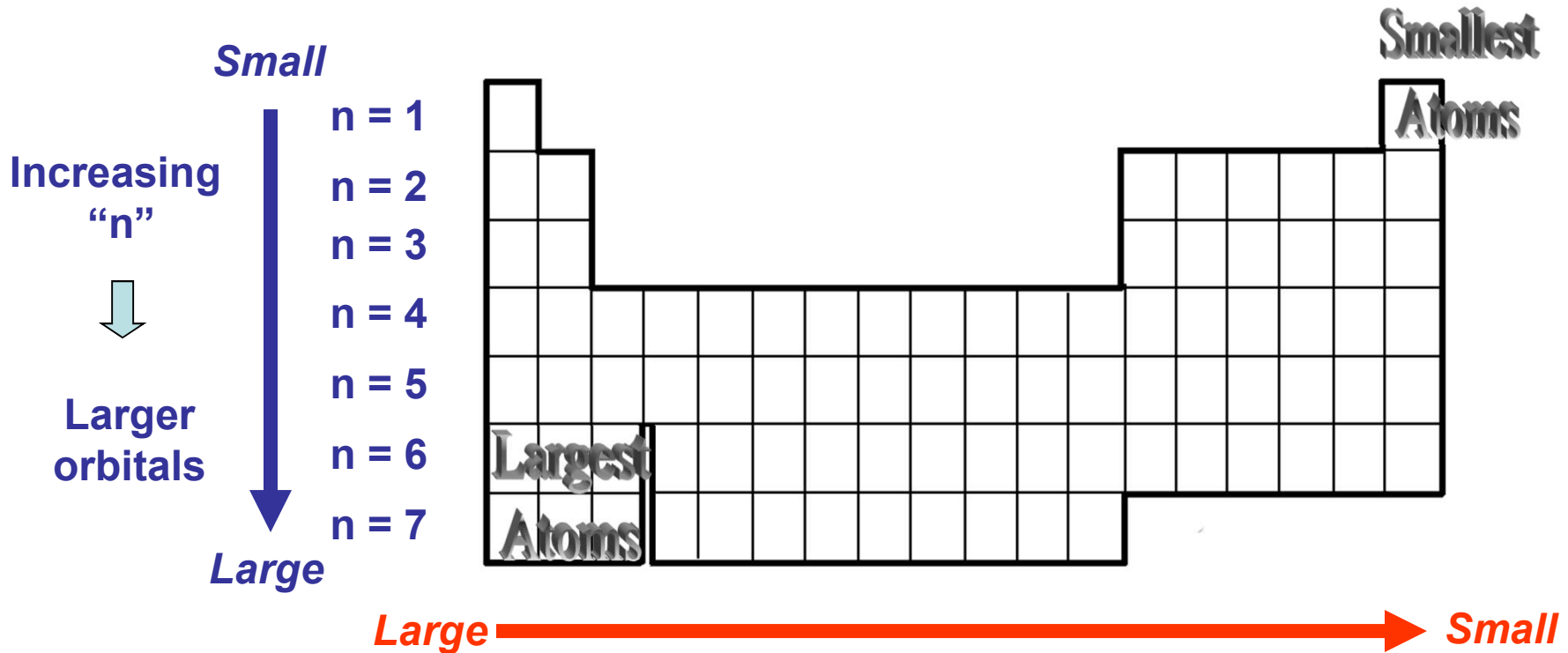


Atomic Trends: Atomic Size



n is constant...

**Additional electrons placed in the same orbital
Atomic size shouldn't change!**

But Z (nuclear charge) is increasing (left to right).

**There is an increasing attraction for all electrons!
Atomic size decreases!**



Atomic Trends: Ionization Energies

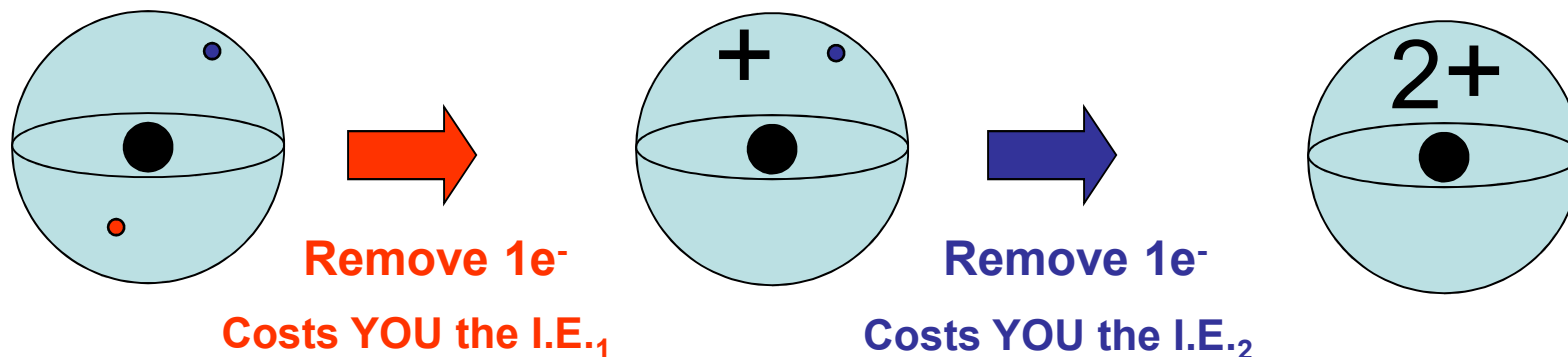
Definitions:

1st Ionization Energy (I.E.₁)

The energy required to **remove the first electron** from a neutral atom (kJ/mole).

2nd Ionization Energy (I.E.₂)

The energy required to **remove the second electron** from the same atom (kJ/mole).



Which electron was the most difficult to remove???



Atomic Trends: Ionization Energies

Which electron was the most difficult to remove???

To remove the **first electron**, you separate an electron from its atom.

Easy

To remove the **second electron**, you separate an electron from an ion.

Difficult

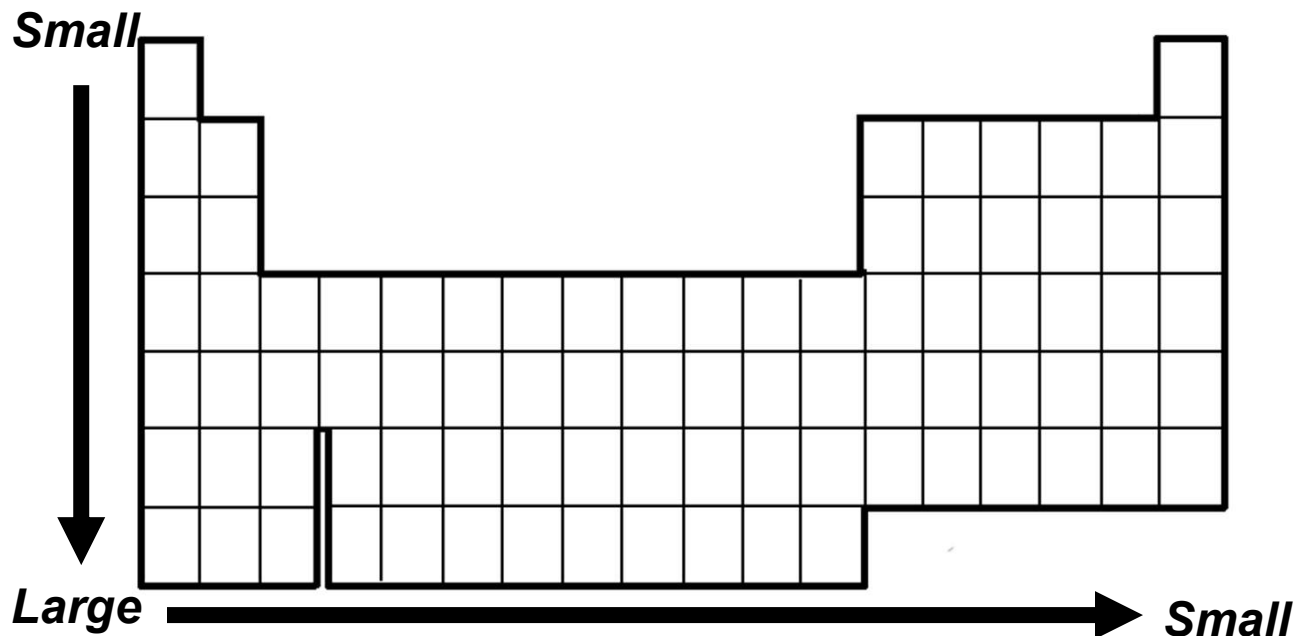
$$I.E._1 < I.E._2$$



Atomic Trends: Ionization Energies

*Electrons
Close to
Nucleus
Difficult to
remove e⁻
Large I.E.*

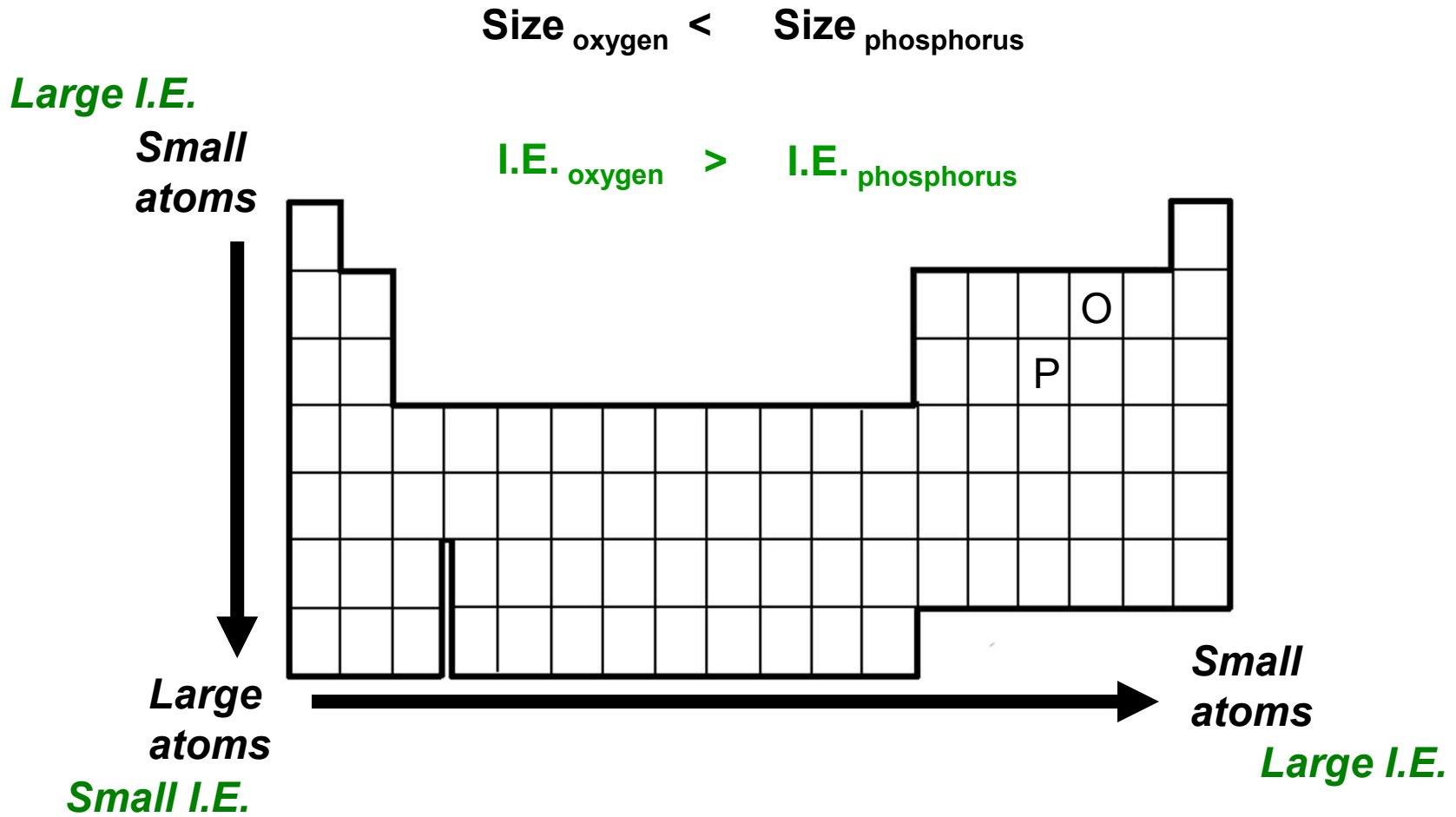
*Electrons
Far From
Nucleus
Easier to
remove e⁻
Small I.E.*



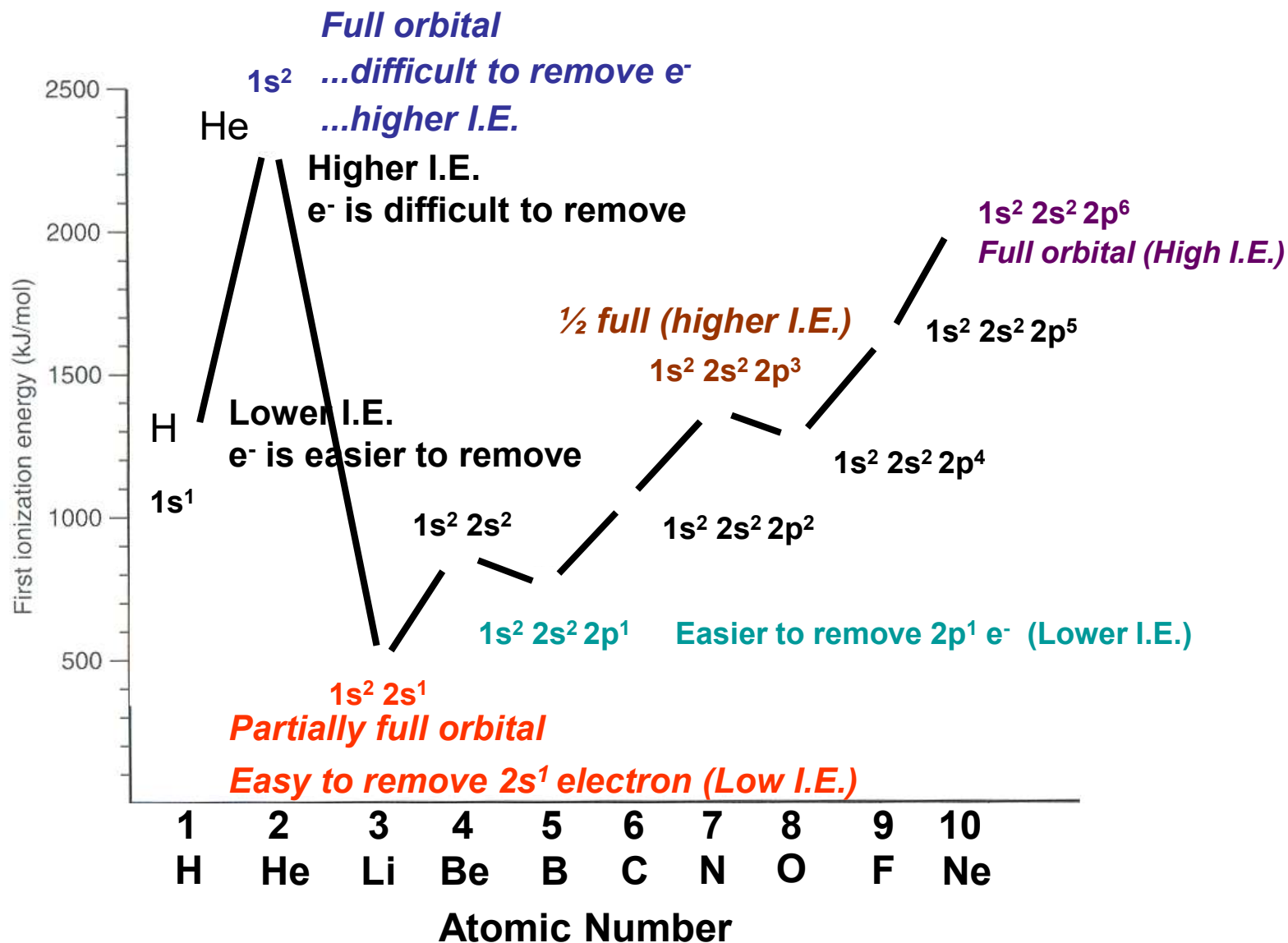
*Electrons
Close to
Nucleus
Difficult to
remove e⁻
Large I.E.*



Atomic Trends



Atomic Trends: Ionization Energies



Atomic Trends: Ionization Energies

