

Don't overcomplicate Periodic Trends...

Be VERY careful with your phrasing!

Believe it or not, when justifying periodic trends, there is no reason to mention shielding or Z_{eff} at all. It isn't "wrong" to use these terms, but you need to be careful to use them correctly, and to not just "vocab bomb" an answer. They want to read an EXPLANATION not a list of vocab words.

Remember...AP Chem LOVES "columbic attraction" explanations!

Two elements in the same period?

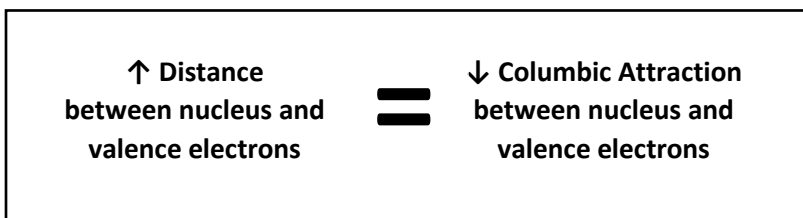
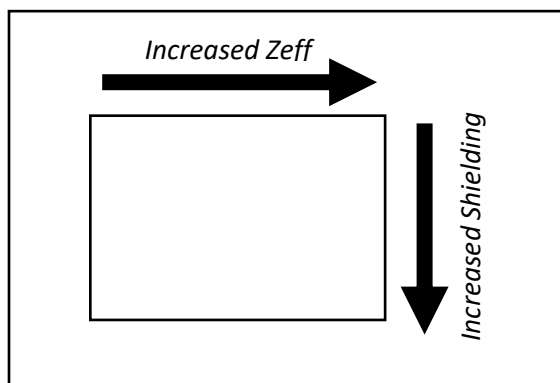
Discuss the fact that...

- Each element has valence electrons that are located in the same energy level.
- One atom has a greater number of protons (greater nuclear charge).
- More protons results in a stronger attraction between the nucleus and the valence electrons.
- Stronger columbic attraction between nucleus and valence e⁻s results in a smaller atomic radius.
- That is what "Greater Effective Nuclear Charge" is trying to explain!

Two elements in the same group?

Discuss the fact that...

- The valence e⁻s are not located in the same energy levels.
- Valence e⁻s for one element are in a higher energy level than the valence e⁻s of the other element.
- The electrons in the higher energy level are (on average) located farther away from the nucleus.
- Being further away from the nucleus results in a weaker attraction between the nucleus and valence e⁻s
- Weaker columbic attraction between nucleus and valence e⁻s results in a larger atomic radius.
- Increased e⁻s also results in more repulsions between electrons resulting in a larger atomic radius
- That is what "Increased Shielding" is trying to explain!



Everything Comes Down to...

- *Attractions*
- *Repulsions*
- *Energy*