Periodic Trends Summary

Coulombic Attraction: attraction between positive and negative charges; shorter distance between charges = stronger attraction
Effective Nuclear Charge: relative strength of a nucleus
Shielding: inner electrons block some attraction between nucleus and valence electrons; more E levels = more shielding

# of E levels is constant, thus shielding is constant
# of protons increases

∴ COULOMBIC ATTRACTION (effective nuclear charge) **INCREASES**

Across a Period

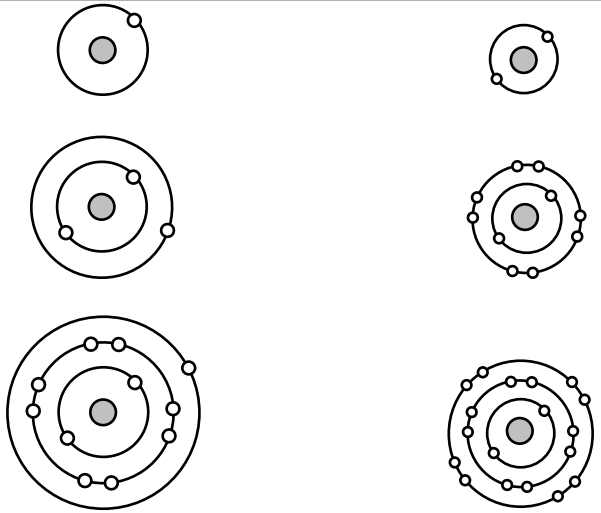
Down a Group

# of E levels increases, thus distance and shielding increases

∴ COULOMBIC ATTRACTION

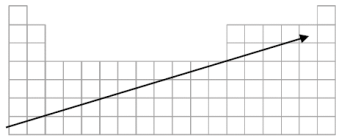
(effective nuclear charge)

DECREASES



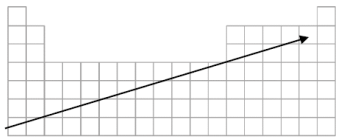
Atomic Radius: size of atom

Stronger Coulombic attraction = smaller atom



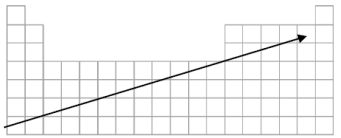
Ionization Energy (IE): energy needed to remove an electron from an atom

Stronger Coulombic attraction = harder to remove electron = higher IE



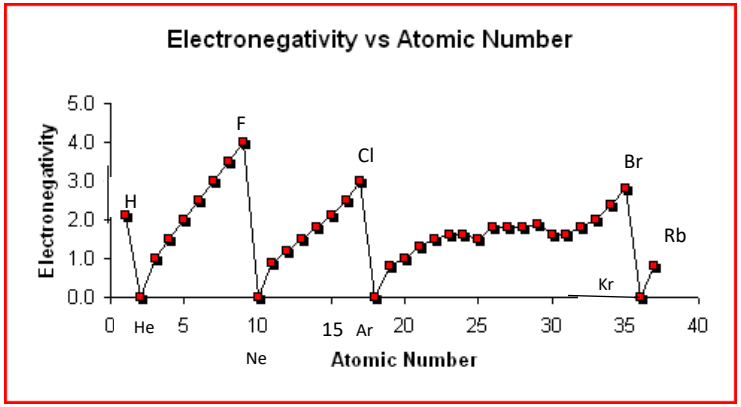
Electronegativity (EN): ability of nucleus to attract another atom's electrons in a chemical bond

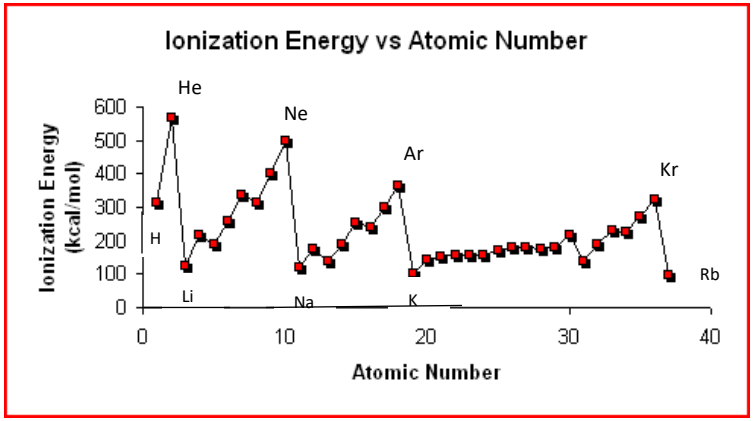
Stronger Coulombic attraction = easier to attract others' electrons = higher EN

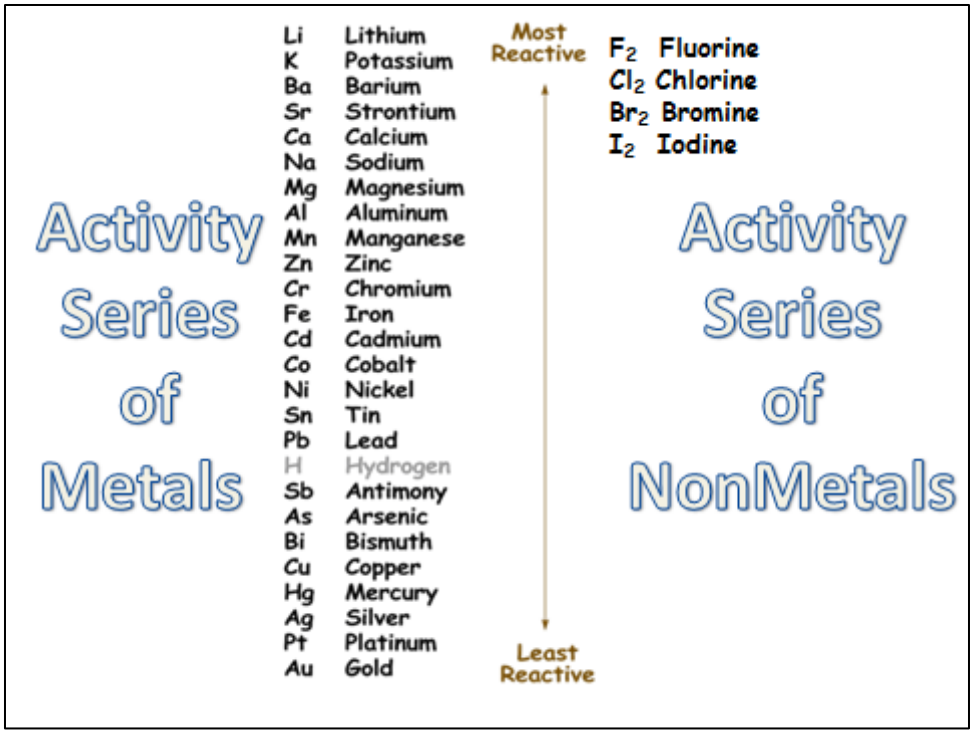


Electronegativity Values

H 2.1																
Li 1.0	Be 1.5											B 2.0	C 2.5	N 3.0	O 3.5	F 4.0
Na 0.9	Mg 1.2											Al 1.5	Si 1.8	P 2.1	S 2.5	Cl 3.0
K 0.8	Ca 1.0	Sc 1.3	Ti 1.5	V 1.6	Cr 1.6	Mn 1.5	Fe 1.8	Co 1.9	Ni 1.8	Cu 1.9	Zn 1.6	Ga 1.6	Ge 1.8	As 2.0	Se 2.4	Br 2.8
Rb 0.8	Sr 1.0	Y 1.2	Zr 1.4	Nb 1.6	Mo 1.8	Tc 1.9	Ru 2.2	Rh 2.2	Pd 2.2	Ag 1.9	Cd 1.7	In 1.7	Sn 1.8	Sb 1.9	Te 2.1	I 2.5
Cs 0.7	Ba 0.9		Hf 1.3	Ta 1.5	W 1.7	Re 1.9	Os 2.2	Ir 2.2	Pt 2.2	Au 2.4	Hg 1.9	Tl 1.8	Pb 1.9	Bi 1.9	Po 2.0	At 2.2
Fr 0.7	Ra 0.9															







Solubility Table:

1. All compounds of **Group 1 and ammonium are soluble**.
2. All **nitrates, acetates & chlorates are soluble.**
3. All **halides are soluble***: except those of silver, mercury (I) & lead.*
4. All **sulfates are soluble:** *except calcium, barium, strontium, lead, & mercury.*
5. All **carbonates, chromates, sulfides, hydroxides, oxides, phosphates, & silicates are insoluble**: *except for group 1 and ammonium (rule 1).*