

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

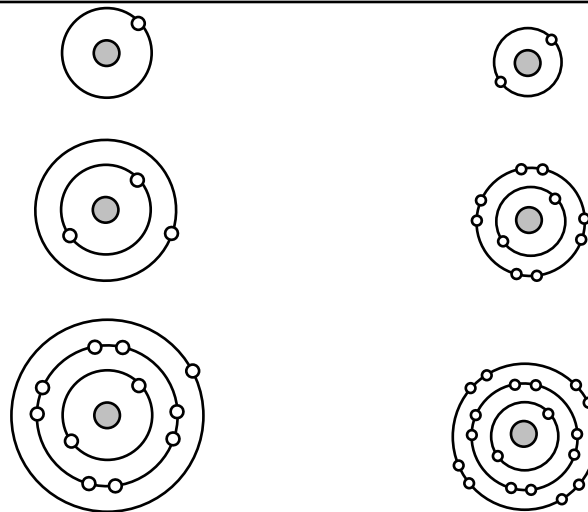
∴ COULOMBIC ATTRACTION (effective nuclear charge) INCREASES

Across a Period

of E levels increases,
thus distance and shielding
increases

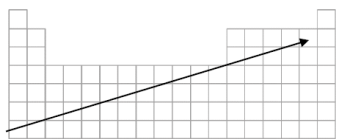
**∴ COULOMBIC
ATTRACTION
(effective nuclear charge)
DECREASES**

Down a Group



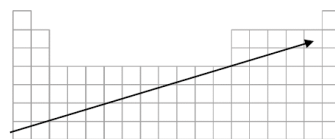
Atomic Radius: size of atom

Stronger Coulombic attraction = smaller atom



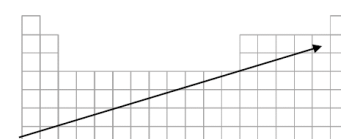
Ionization Energy (IE): energy needed to remove an electron from an atom

Stronger Coulombic attraction = harder to remove electron = higher IE



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

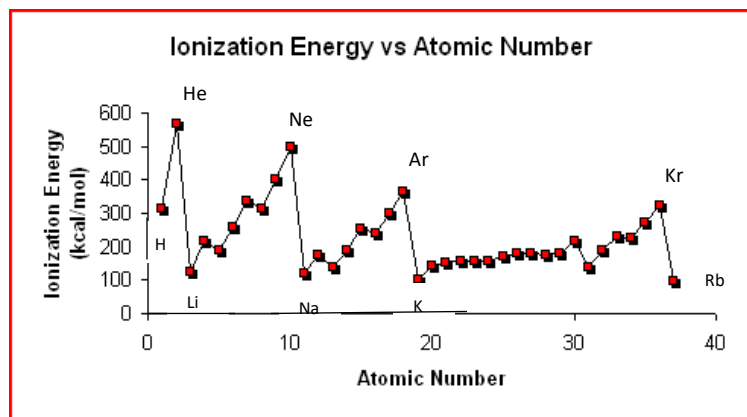
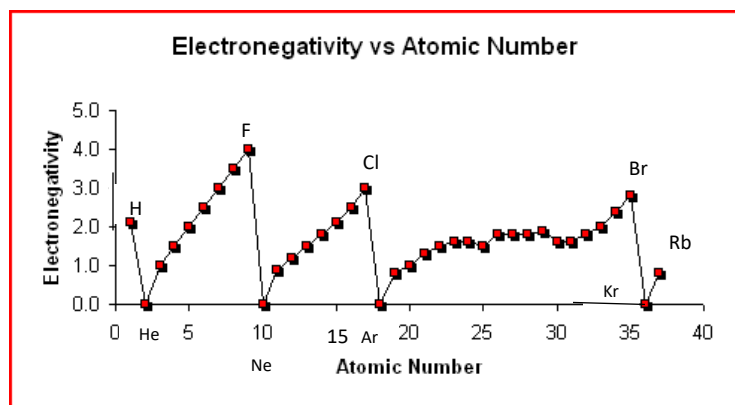
Stronger Coulombic attraction = easier to attract others' electrons = higher EN



Electronegativity Values																																		
H 2.1																	B 2.0	C 2.5	N 3.0	O 3.5	F 4.0													
Li 1.0	Be 1.5															Al 1.5	Si 1.8	P 2.1	S 2.5	Cl 3.0														
Na 0.9	Mg 1.2																	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																																	

Activity Series of Metals		Activity Series of NonMetals	
Li	Lithium	F ₂	Fluorine
K	Potassium	Cl ₂	Chlorine
Ba	Barium	Br ₂	Bromine
Sr	Strontium	I ₂	Iodine
Ca	Calcium		
Na	Sodium		
Mg	Magnesium		
Al	Aluminum		
Mn	Manganese		
Zn	Zinc		
Cr	Chromium		
Fe	Iron		
Cd	Cadmium		
Co	Cobalt		
Ni	Nickel		
Sn	Tin		
Pb	Lead		
H	Hydrogen		
Sb	Antimony		
As	Arsenic		
Bi	Bismuth		
Cu	Copper		
Hg	Mercury		
Ag	Silver		
Pt	Platinum		
Au	Gold		

Most Reactive ↑
↓ Least Reactive



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).*