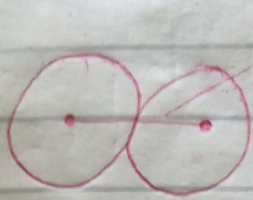


Chemical Bonding

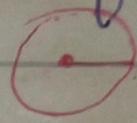
Atomic Size:

↳ distance b/w nucleus and outer shell of atom

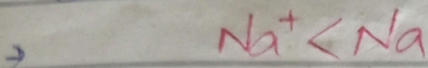


Bond length

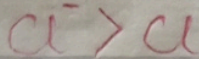
$$A.R = \frac{B.L}{2}$$



→ Cation radius < Neutral atom

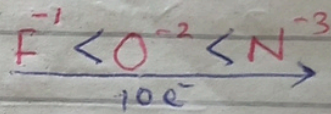
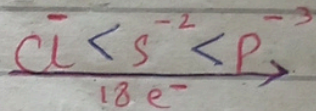
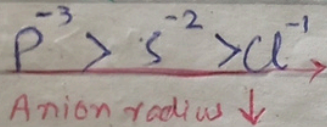


→ Anion radius > Neutral atom



→ Anionic Radius \propto -ive charge

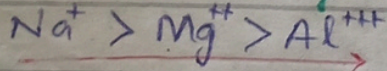
Left to right



→ Cationic Radius \propto 1

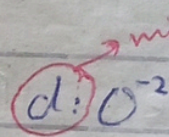
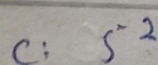
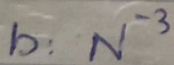
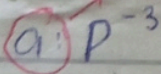
+ive charge.

left to right



cation radius ↓

MCG: → max radius?



minimum
b/c P^{-3} is 3rd period and nuclear charge increases L-R

Trends:

Left to Right Radius ↓

Top to Bottom Radius ↑

Factors:

1
A.R \propto Nuclear charge

A.R \propto shielding effect / shells

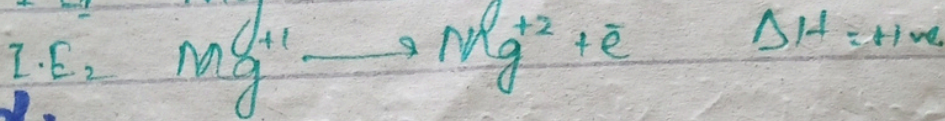
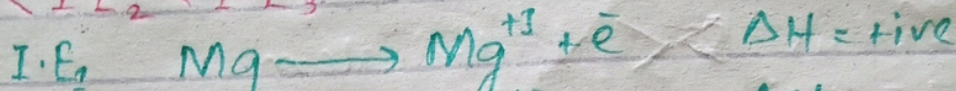
Ionization Energy:

→ Energy required to remove an electron from gaseous atom.

→ KJ/mol

→ Endothermic (always).

→ $I.E_1 < I.E_2 < I.E_3$



Trend:

L to R $I.E \uparrow$

T to B $I.E \downarrow$

Exception:

IIA > IIIA

VIA > VIIA

Be > B

N > O

Mg > Al

P > S

$ns^2 > ns^1np^1$

$ns^2np^3 > ns^2np^2$

Factors:

$I.E \propto$ Nuclear charge.

\propto shell/shielding/size

\propto E. configuration

$(1s^2 > 2s^2 > 3s^2) \quad s > p > d > f$

which gp shows abnormal I.E trend?

a: IIA, VIA

b: IIIA, VIIA

c: VIIA, VIIA

d: IIA, VIIA

Li	Be	B	C	N	O	F	Ne
Na	Mg	Al	Si	P	S	Cl	Ar

MCG: max I.E ?

a: Be

b: B

c: C

d: same

max I.E

a: N max

b: O

c: P

d: S min

MCG:

max I.E ?

a: p^2

b: p^3

c: p^4

d: ps

Cl
F

Periodic Table:

He → max (highest)

Cs → min (lowest)

Electron Affinity:

↳ Energy release or absorb when e^- is added to gaseous atom

→ KJ/mol

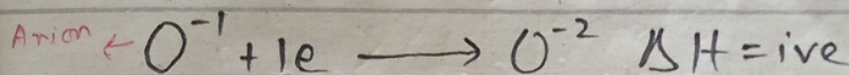
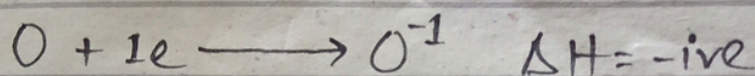
→ E.A₁ (-ive) Exo

→ E.A₂ (+ive) Endo

Endo?

a: $F + e^-$ b: $Cl + e^-$

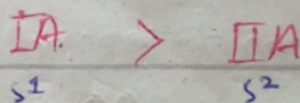
c: $N + e^-$ d: $N^{-1} + e^-$



Trends:

Same as I.E

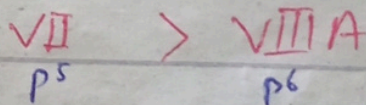
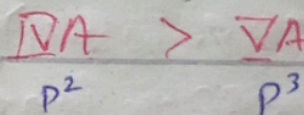
Exceptions:



Factors:

$$E.A \propto \frac{1}{r}$$

E: configuration



Electronegativity:

→ Ability to attract shared pair of e^- s

→ Unit less

Trends & Factors:

Similar I.E and E.A

Highest → F (4)

Lowest → Cs (0.7)