Announcements – Lecture IV– Thursday, Sep 17th

1. **iClicker for credit starts today , September 17th**

   a) iClicker Grading – participate in 75% of questions posed – graded on responding and not whether the answer is right or wrong.

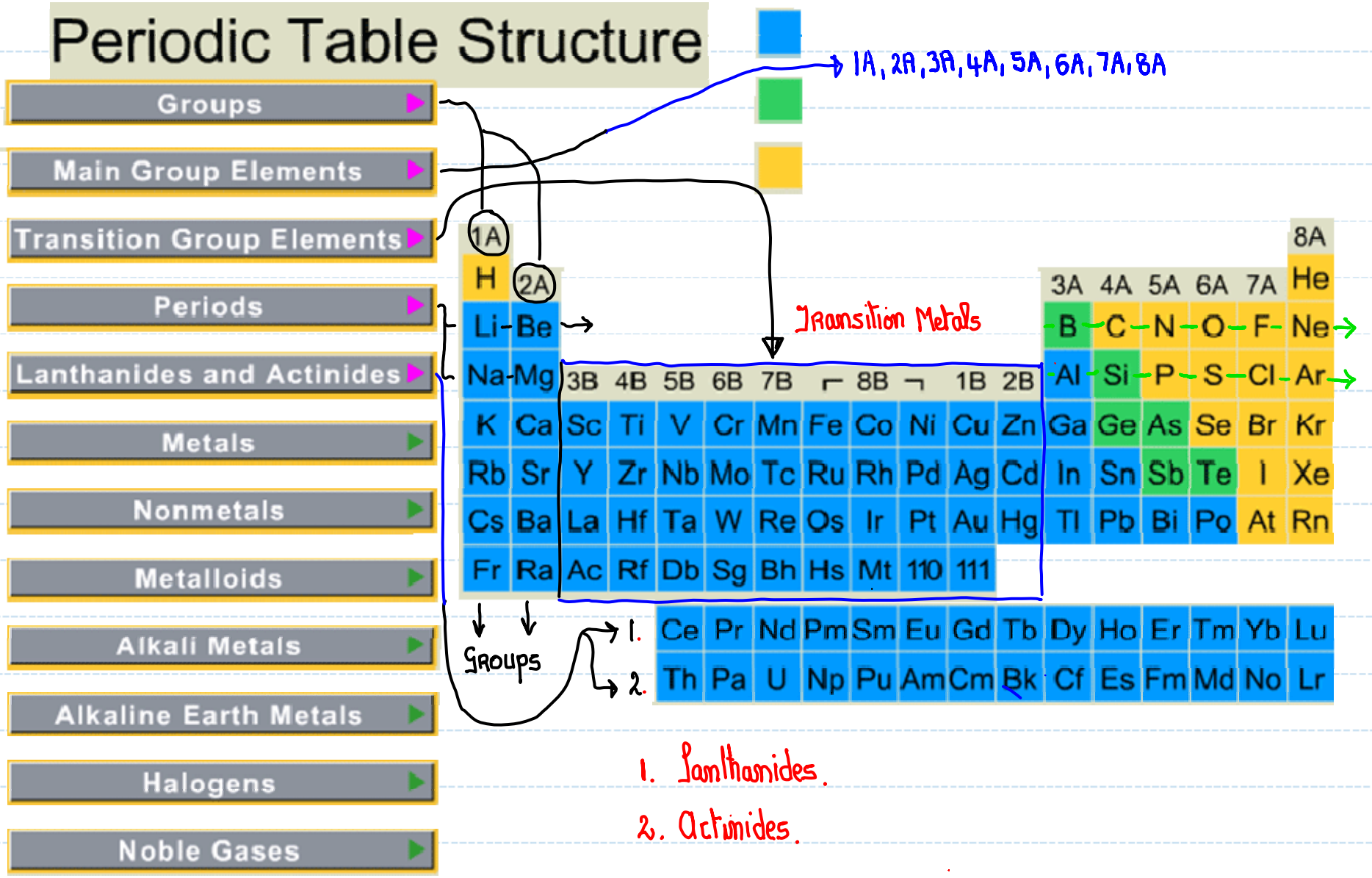
2. **First Lab – Saturday, September 26th … 1-4pm … ISB 155/160 (A-E)**

3. 

iClicker:
Choose any letter: A-E

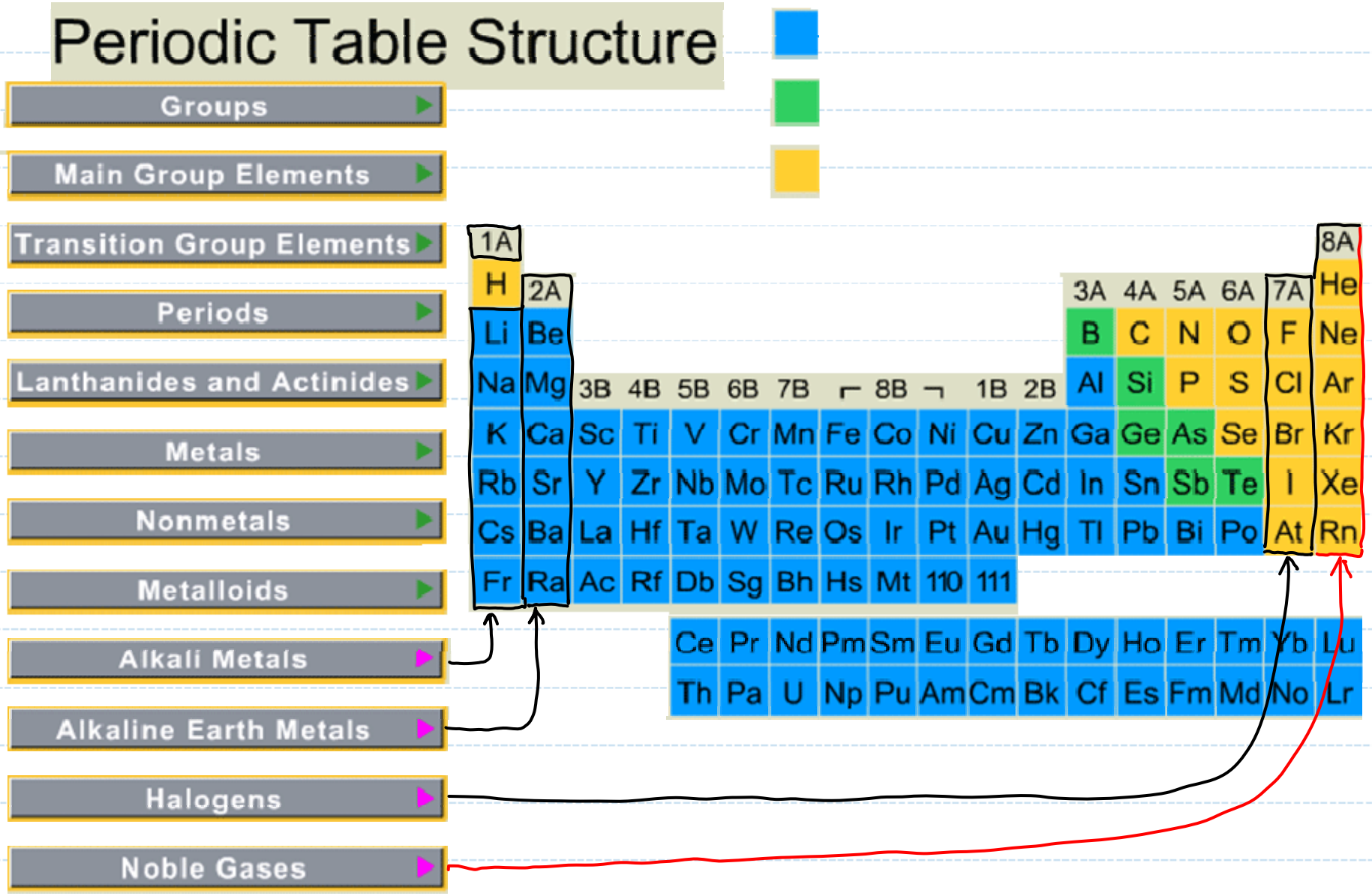
2.5 What Is the Periodic Table

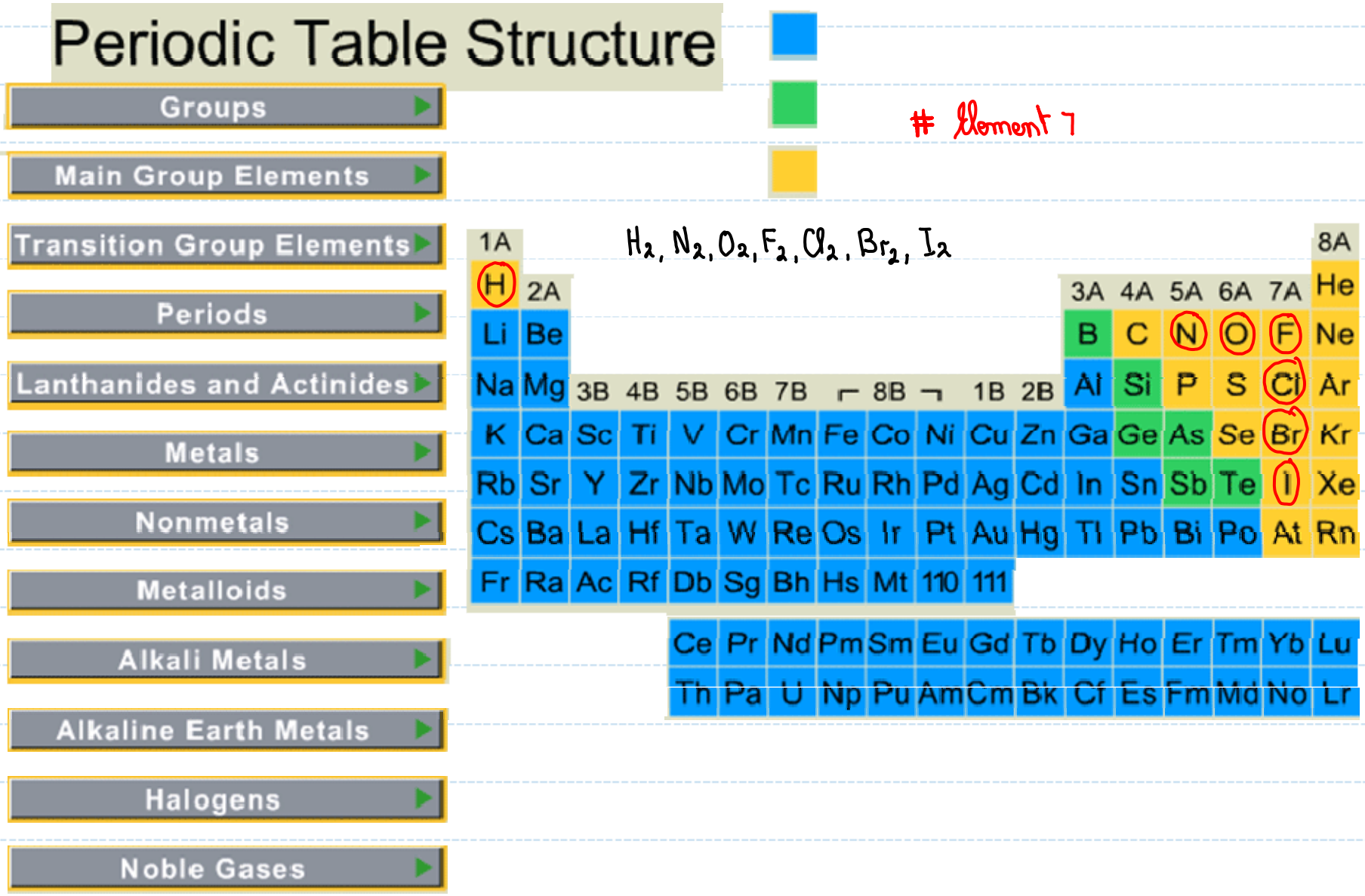
Groups – Periods – Main Group – Transition Metal – Lanthanide – Actinide

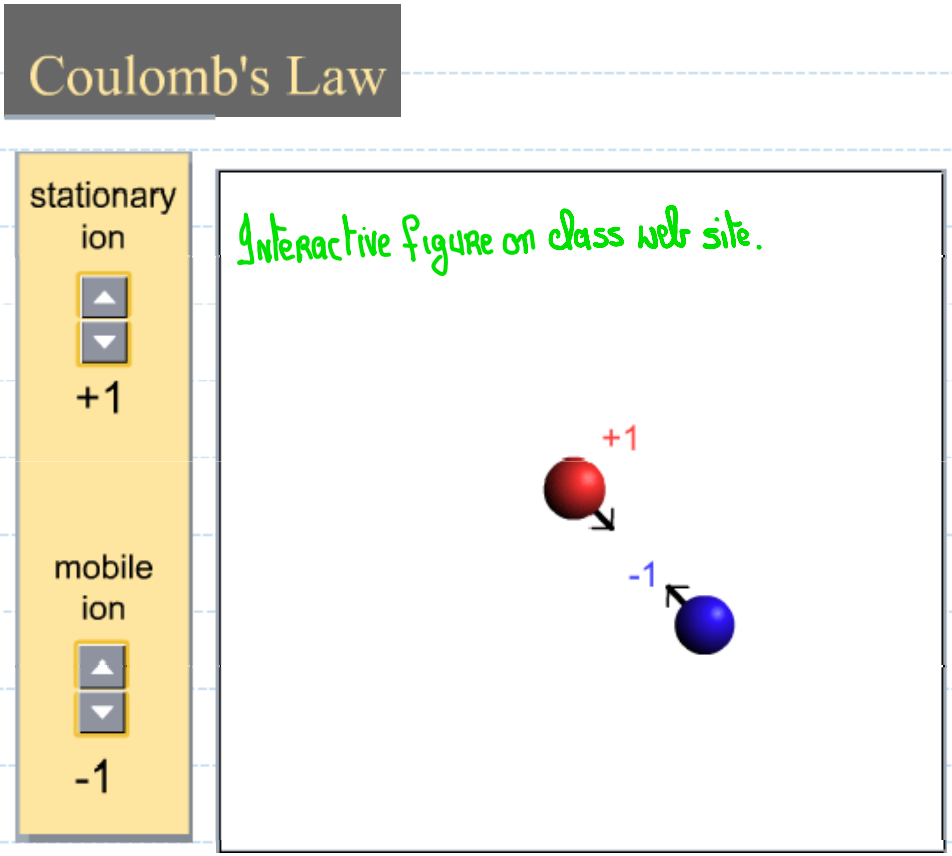


2.5 What Is the Periodic Table

Alkali Metals – Alkaline Earth Metals – Halogens – Noble Gases




Periodic Table Structure
Groups
Main Group Elements
Transition Group Elements
Periods
Lanthanides and Actinides
Metals
Nonmetals
Metalloids
Alkali Metals
Alkaline Earth Metals
Halogens
Noble Gases
Element 7
$H_2, N_2, O_2, F_2, Cl_2, Br_2, I_2$
1A 2A 3A 4A 5A 6A 7A 8A
H He
Li Be B C N O F Ne
Na Mg 3B 4B 5B 6B 7B 8B 1B 2B Al Si P S Cl Ar
K Ca Sc Ti V Cr Mn Fe Co Ni Cu Zn Ga Ge As Se Br Kr
Rb Sr Y Zr Nb Mo Tc Ru Rh Pd Ag Cd In Sn Sb Te I Xe
Cs Ba La Hf Ta W Re Os Ir Pt Au Hg Tl Pb Bi Po At Rn
Fr Ra Ac Rf Db Sg Bh Hs Mt 110 111
Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu
Th Pa U Np Pu Am Cm Bk Cf Es Fm Md No Lr



FA: Force of Attraction.

a) Magnitude of the charges.

b) Distance between them

3.5 What Is an Ionic Bond and What Holds It Together

Which of the following three salts have the greatest force of attraction?
(*Assume that the distance is constant*)

a) AlP ✓ b) NaI c) CaO

AlP

Al : Gp 3A ... +3

P : Gp 5A ... -3

NaI

Na : Gp 1A ... +1

I : Gp 7A ... -1

CaO

Ca : Gp 2A ... +2

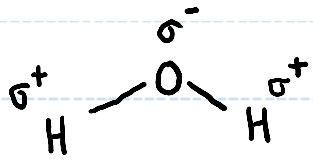
O : Gp 6A ... -2

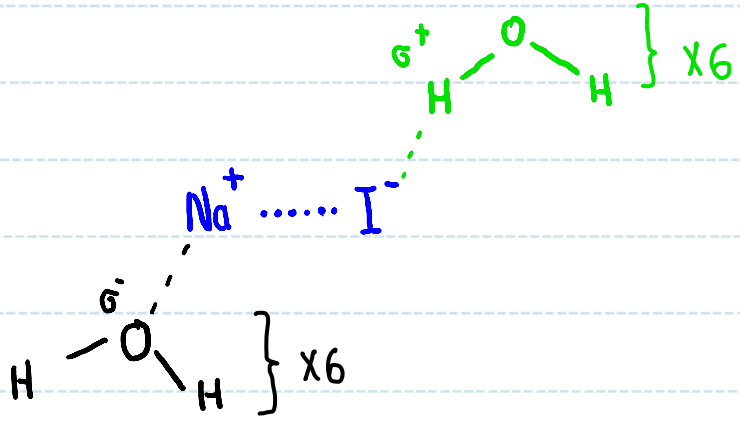
3.5 What Is an Ionic Bond and What Holds It Together

Which of the following salts would you expect to be soluble in water?
(*Assume that the distance is constant*)

a) AlP b) NaI ✓ c) CaO

↳ The salt with the smallest FA.





3.6 How Do We Predict Formulas and Name Ionic Compounds.

A *Binary Compounds*

What is the formula and name of the ionic compound produced by Magnesium and Oxygen?

Mg : Group 2A ... +2

O : Group 6A ... -2

Mg^{2+} O^{2-}

MgO

Remember: cation placed first and named first

Magnesium oxide

Formula and name for the ionic compound produced by Oxygen and Aluminum?

O : Group 6A ... -2

Al : Group 3A ... +3

Al^{3+} O^{2-}

Al_2O_3

Aluminum oxide

3.6 How Do We Predict Formulas and Name Ionic Compounds.

B *Transition Metals*

What is the correct chemical formula for the ionic compound Iron oxide?

a) FeO
b) FeO_2
c) Fe_2O_3

?

The name given is ambigious ... you have no way to determine the charge on the metal - a Transition metal - based on the name given.

a) FeO : $? + (-2) = 0$, $\therefore ? = +2$ Iron (II) oxide

b) FeO_2 : $? + 2(-2) = 0$, $\therefore ? = +4$ Iron (IV) oxide

c) Fe_2O_3 : $2? + 3(-2) = 0$, $\therefore ? = +3$ Iron (III) oxide ... Rust.

Use Roman Numerals to indicate the charge on the Transition metal.