

Announcements – Lecture IV– Thursday, Sep 15th

- 1. iClicker for credit starts , September 20th**
- 2. First Lab – Saturday, September 24th ... 1-4pm ... ISB 155/160 (A-E)**

2.5 What Is the Periodic Table – *The Seven Diatomics*

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			



3.5 What Is an Ionic Bond and What Holds It Together – *Coulomb's Law*

Coulomb's Law

stationary
ion



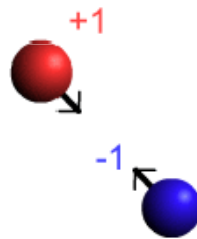
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mobile
ion



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Interactive figure on class web site.



FA: Force of attraction.

- a) Magnitude of the charges.
- b) Distance between them

Force of Attraction = 3.7×10^{-9} N

Distance = 2.50 Å



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: Gr 3A ... +3

P: Gr 5A ... -3

NaI

Na: Gr 1A ... +1

I: Gr 7A ... -1

CaO

Ca: Gr 2A ... +2

O: Gr 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.

