

# UNIT #5 – Atomic Structure and Periodicity – Glue Ins

In backwards order so you can cut them off the packet each day :-)

## N19

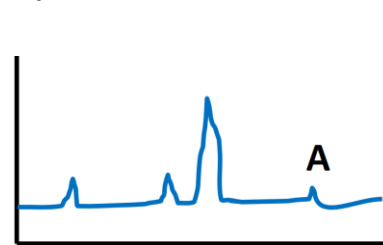
Oxygen:



Scandium:

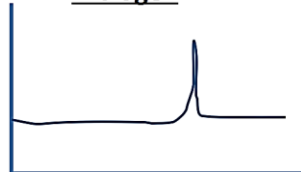


Example #1:

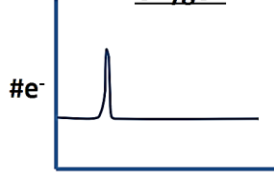


Example #2:

Nitrogen



Oxygen



Example #3:



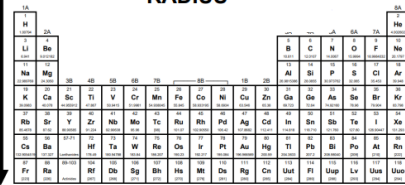
## N18

IONIZATION ENERGY  
ELECTRONEGATIVITY  
ELECTRON AFFINITY\*

EFFECTIVE NUCLEAR CHARGE -  $Z_{EFF}$

RADIUS  
SHIELDING

RADIUS



IONIZATION ENERGY  
ELECTRONEGATIVITY  
ELECTRON AFFINITY

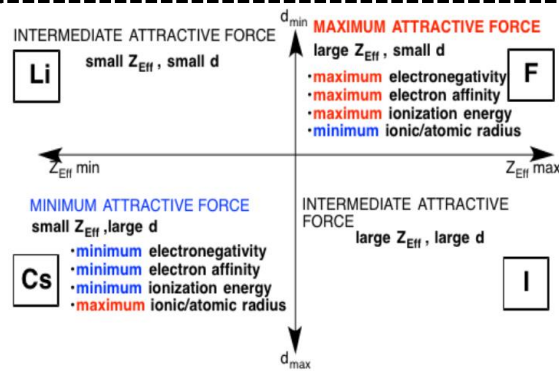
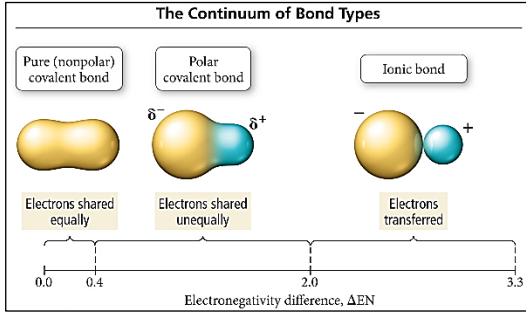


TABLE 8.1 Successive Values of Ionization Energies for the Elements Sodium through Argon (kJ/mol)

Element	IE <sub>1</sub>	IE <sub>2</sub>	IE <sub>3</sub>	IE <sub>4</sub>	IE <sub>5</sub>	IE <sub>6</sub>	IE <sub>7</sub>
Na	496	4560					
Mg	738	1450	7730				
Al	578	1820	2750	11,800			
Si	786	1580	3230	4360	16,100		
P	1012	1900	2910	4960	6270	22,200	
S	1000	2250	3360	4560	7010	8500	27,100
Cl	1251	2300	3820	5160	6540	9460	11,000
Ar	1521	2670	3930	5770	7240	8780	12,000



## N16

de Broglie Equation

$$\lambda = \frac{h}{mv}$$

m = particle mass

Bohr Equation

$$E = -2.178 \times 10^{-18} J \left( \frac{Z^2}{n^2} \right)$$

Z = nuclear charge  
n = energy level

Energy Change  
Between Two  
Energy Levels

$$E = -2.178 \times 10^{-18} J \left( \frac{Z^2}{n_{final}^2} - \frac{Z^2}{n_{initial}^2} \right)$$

## N17

