

Chem. Ch. 8 Notes

- Ionic bonds = due to the attractions between oppositely charged ions.
- Covalent bonds = molecules are formed by sharing electrons between atoms.
- Metallic bonds = formed by electrons that are relatively free to move through the metal.
- Lewis Symbol: the elements chemical symbol plus a dot for each valence electron.

• Sulfur \rightarrow $\cdot\ddot{S}\cdot$ # of valence electrons = group #

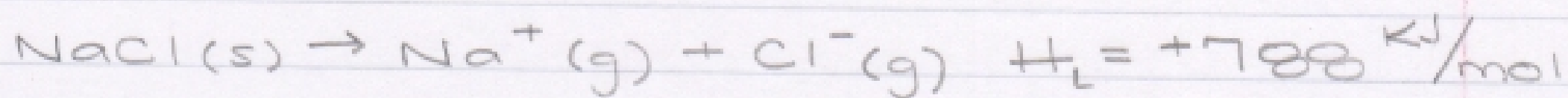
- The Octet Rule: Atoms tend to gain, lose, or share electrons until they are surrounded by 8 valence electrons

- Ionic Bonding = Electron Transfer



- Brittle
- High Melting point
- Crystalline
- Can be cleaved

- Lattice Energy = the energy required to completely separate one mole of a solid ionic compound into its gaseous ions



- For a given arrangement of ions, the lattice energy increases as the charges on the ions increase and as their radii decrease

$$E_{el} = \frac{kQ_1Q_2}{d} \quad Q = \text{charge}$$

$k = 8.99 \times 10^9 \text{ J}\cdot\text{m}/\text{C}^2$

Increasing radius = decreasing lattice energy
↳ for anion or cation

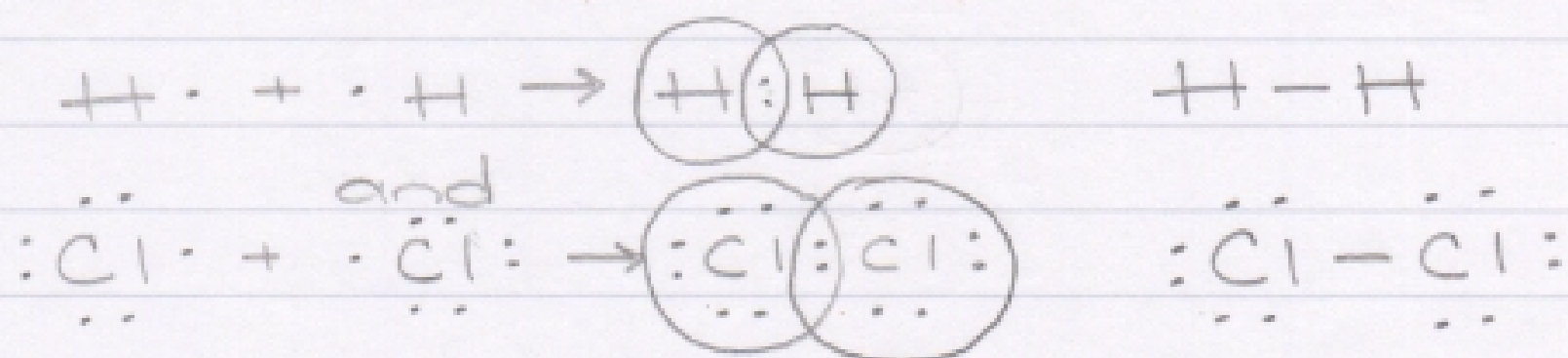
- Transition-Metal Ions

- In forming ions, transition metals lose the valence-shell electrons first, then as many d electrons as required to reach the charge of the ions.



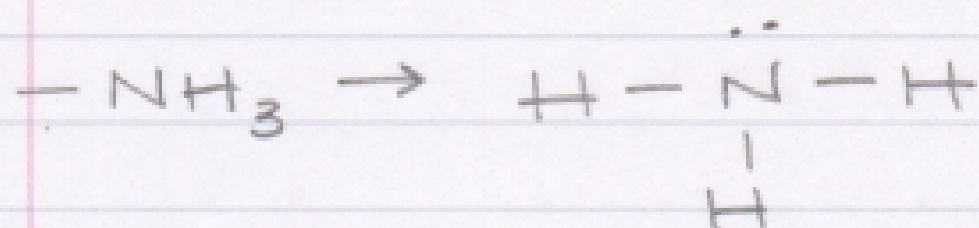
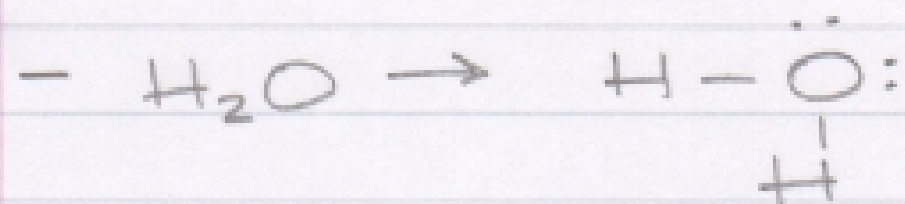
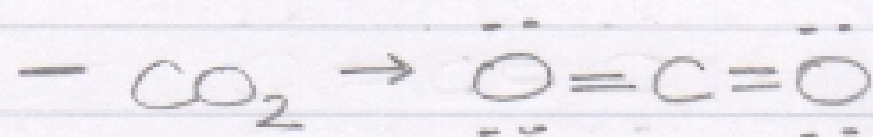
- Covalent Bonding = a chemical bond formed by sharing a pair of electrons.

- Lewis Structures

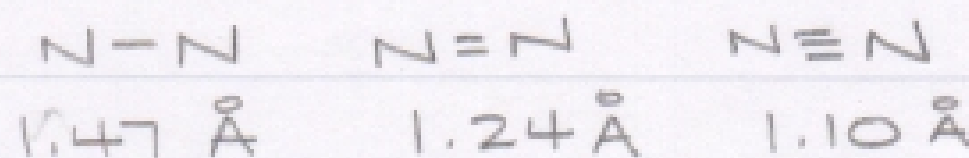
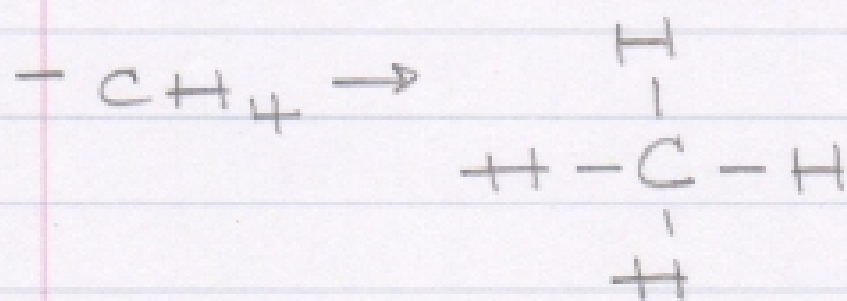


SINGLE

MULTIPLE



→ More bonds = shorter distance of radius



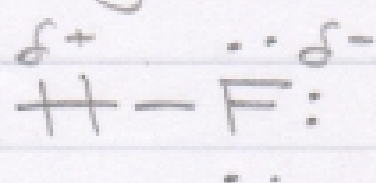
- Bond polarity

- Polarity = how equally or unequally electrons are shared

Electronegativity

↑ EN

*The more electronegativity = more polar



OR

