

Chemistry Review

Chemical Fundamentals

- * **Matter** : anything that has mass and takes up space
- * biochemists are concerned with 6 elements C, H, O, N, S and P
- * **Atom** : smallest particle of an element

Nucleus

- * Nucleus contains protons (+) and neutrons (0)
- * number of protons is what defines an element
- * Energy levels/orbitals contain electrons (-)

Bohr Rutherford Review

- * Write the standard atomic notation for sodium.
- * Draw a sodium atom.
- * Draw a sodium ion.

Valence Electrons and Lewis Structures

- * Are found in the outermost orbit
- * Are responsible for the chemical properties of an element
- * Are involved in chemical bonding

Bonding and Bond Types

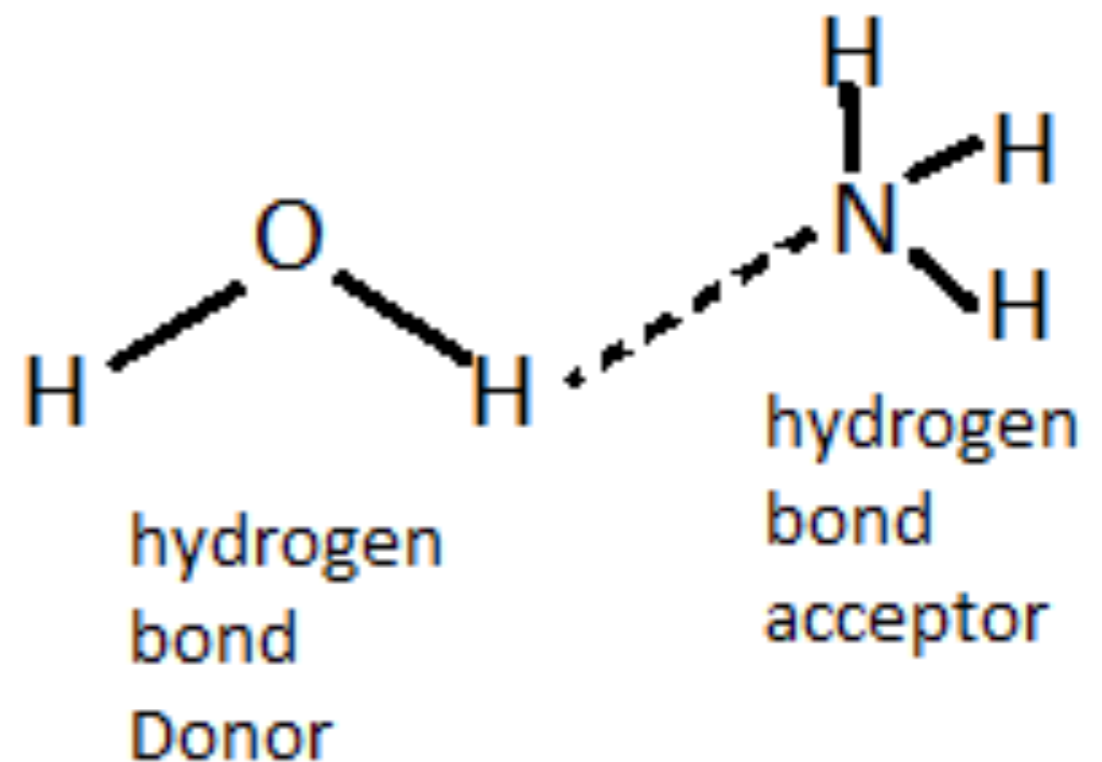
- * There are two types of intramolecular bonds:
 - * Ionic and Covalent

- * Ionic: between a metal and non-metal
 - * electrons are gained and lost to form anions (-) and cations (+)
- * Covalent : between two non-metals
 - * electrons are shared
 - * a) polar : unequal sharing of electrons
 - * b) non-polar : equal sharing of electrons

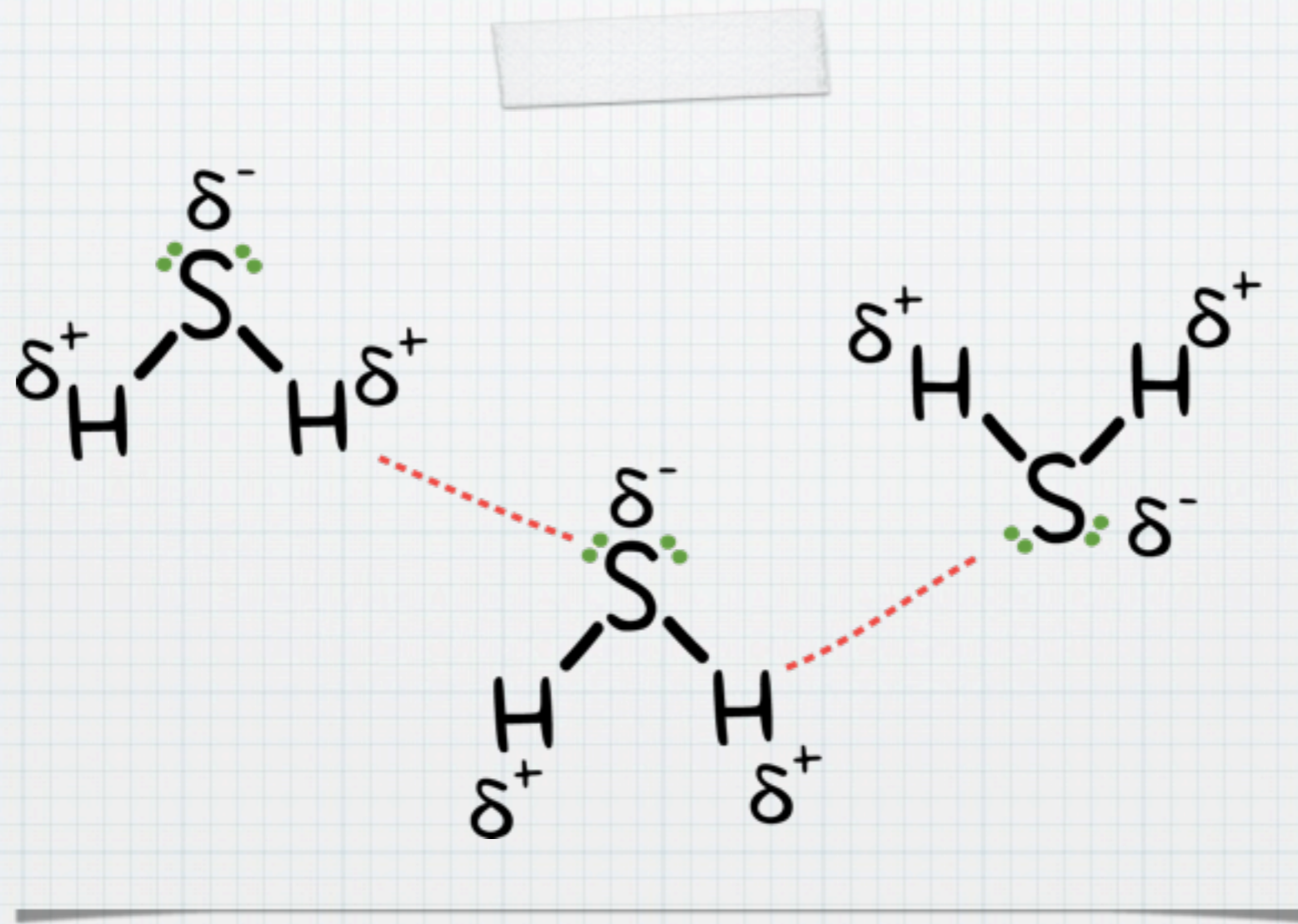
Bonding and Bond Types

- * There are three types of intermolecular bonds:
- * Hydrogen bonds, dipole-dipole interactions, and London dispersion forces

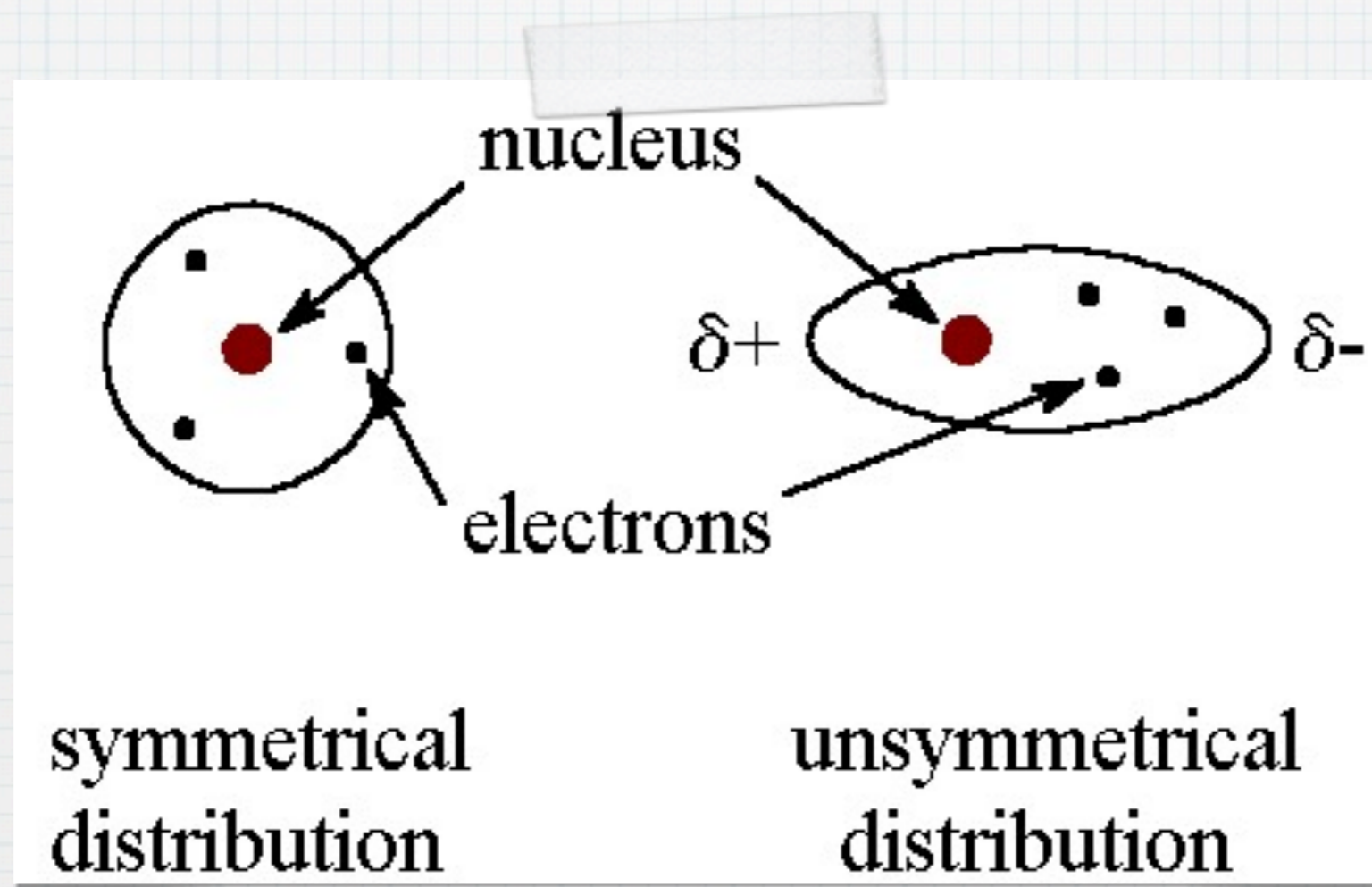
- * 1. Hydrogen bonds : strongest
- * forms when hydrogen attaches to N, O, or F



- * 2. Dipole-dipole interactions : hold polar molecules together, unequal distribution of electrons creating (+) and (-) areas

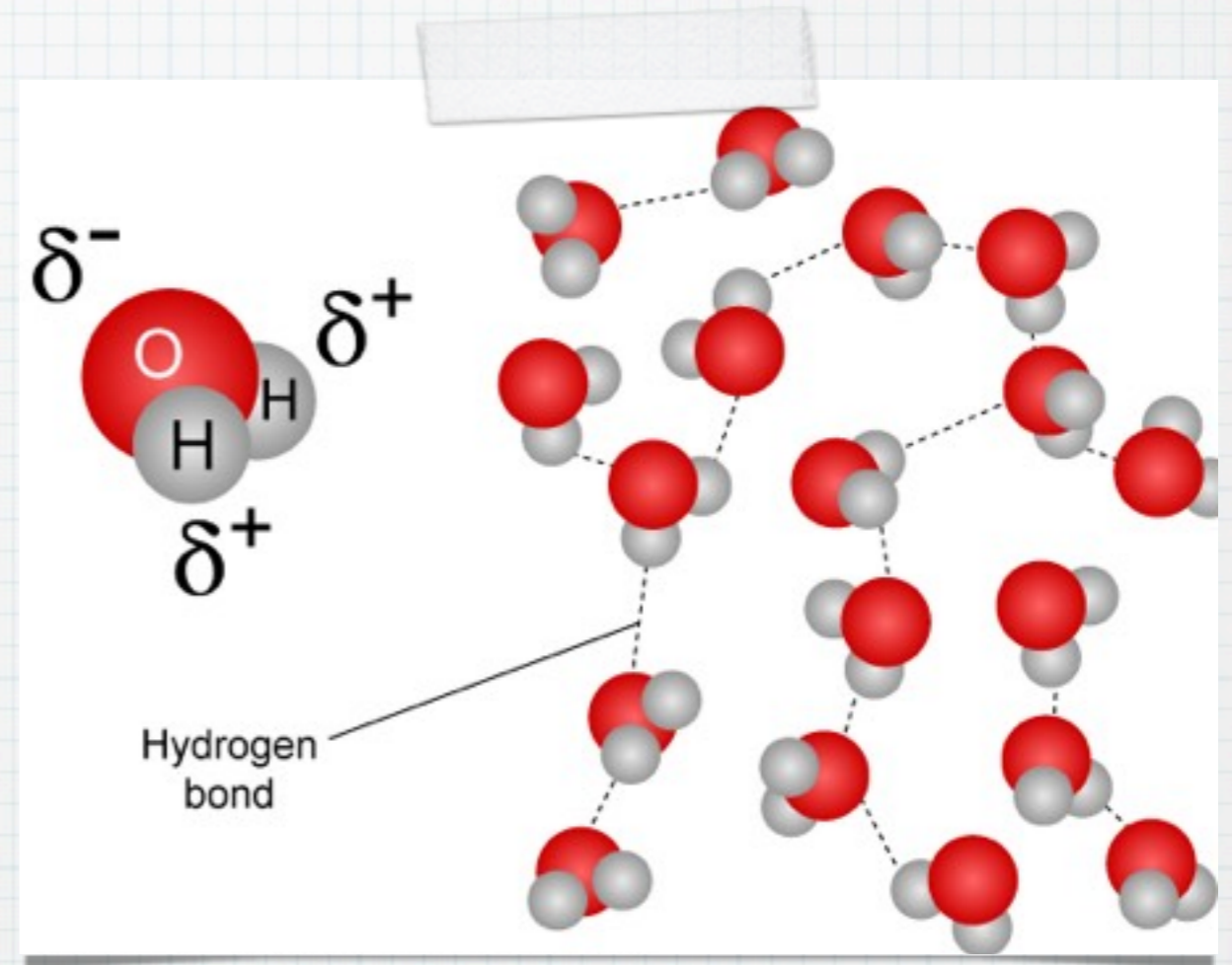


- * **3. London dispersion forces: weakest, exist between all atoms and molecules due to the temporary unequal distribution of electrons as they move about the nuclei**



Structure of Water

- * Water contains both O and H. The O is more negative and the H is more positive, making water polar.



Properties of Water

- * **Cohesion:** attraction of like molecules to one another (water to water)
- * **Adhesion:** attraction of dissimilar molecules (water to leaf)

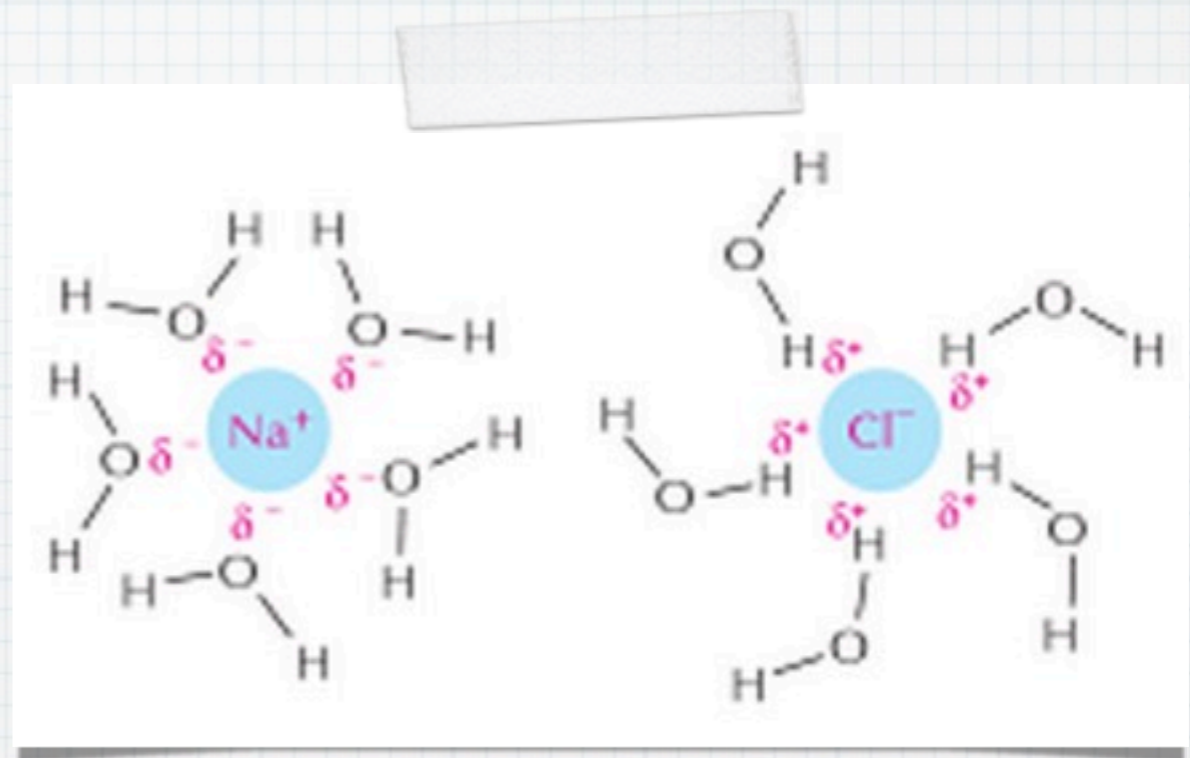
Water and Bonding

- * like dissolves like

- * water is polar and will dissolve other polar/charged substances

Hydrophilic Molecules

- * like water, can be dissolved in it
- * are polar



Hydrophobic Molecules

- * don't like water, can't be dissolved in it
- * are non-polar

