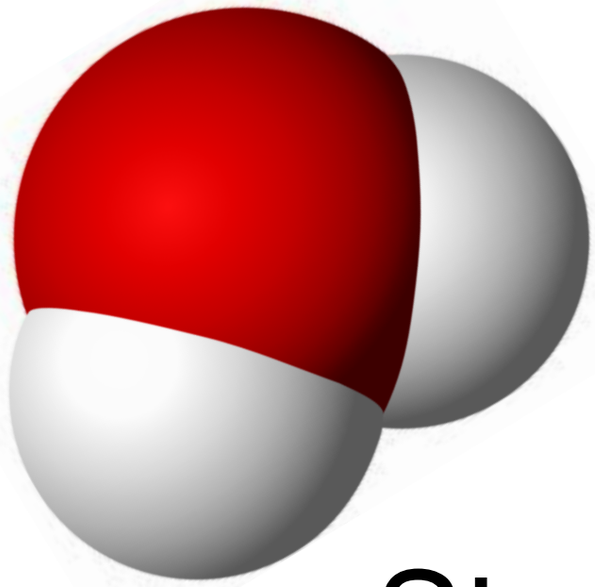
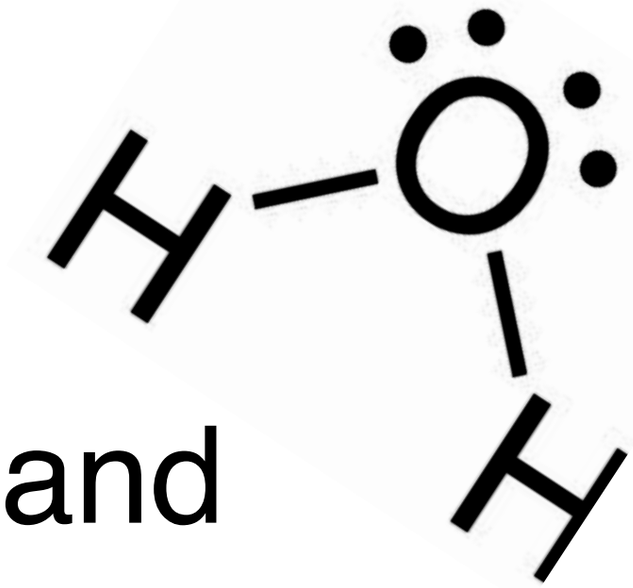




Chemistry 2.4
Structural, bonding and Thermodynamics

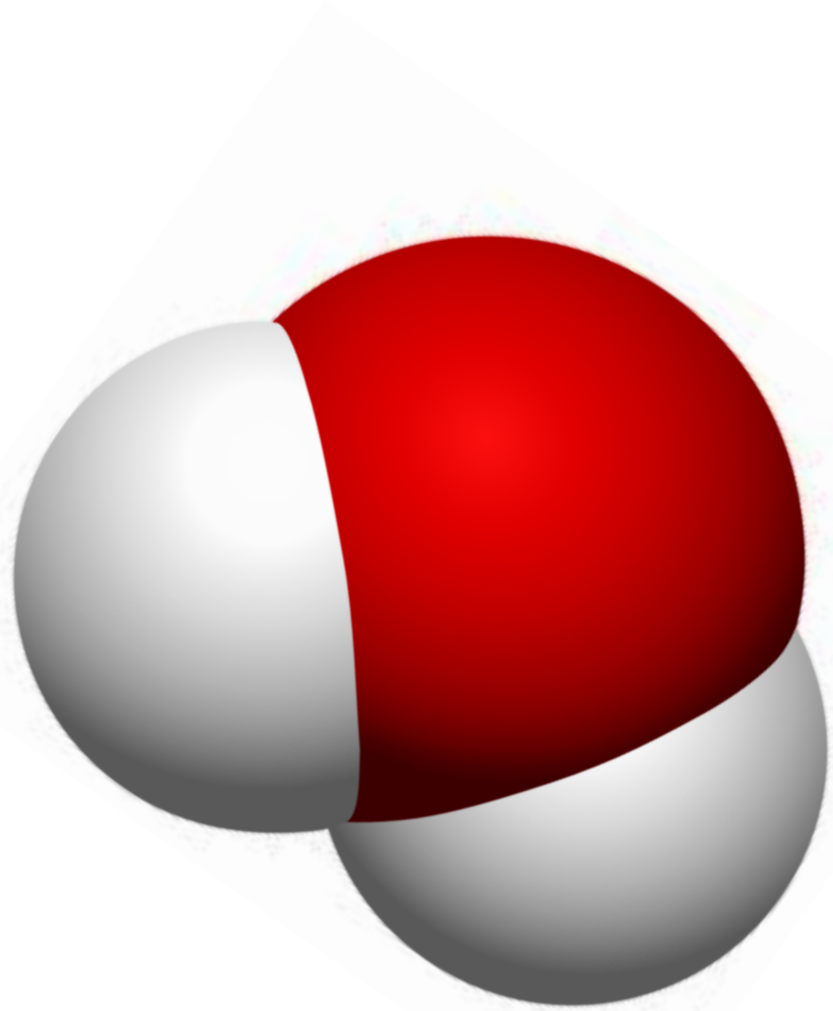
Molecular substances
Lewis diagram

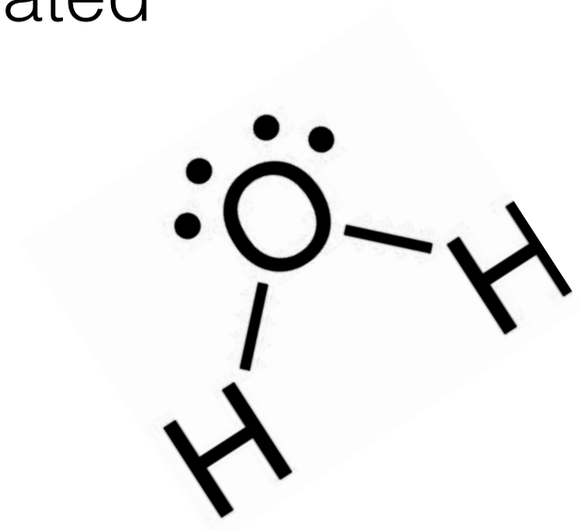
Molecular substance

- Non-metal bonding with non-metal

- Atoms reach chemical stability by sharing electrons

- By doing so, molecules are created





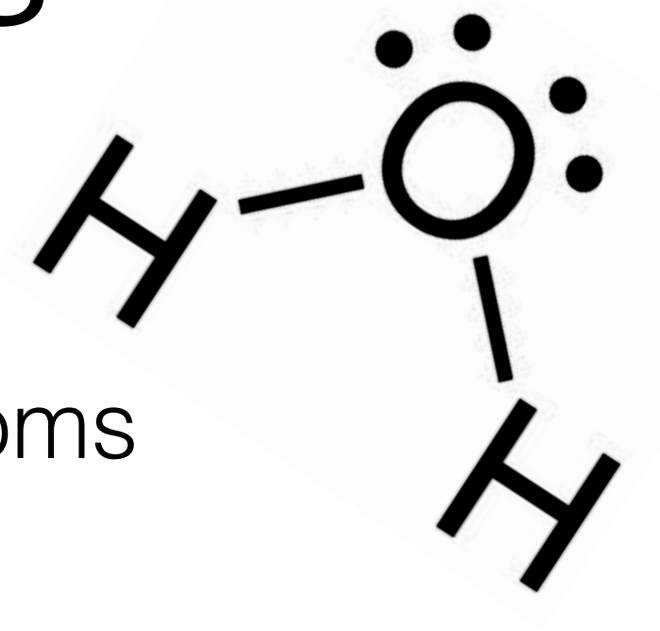
Forces

- There are two major forces in a molecular substance

- Intermolecular force- force between the molecules. Attractions between particles, Physical properties.

- Intramolecular force- force between the atom in the molecule. Bond enthalpy, Chemical properties.

Lewis diagrams



- Also known as electron dot diagrams.
- It is a graphical representation of the atoms arrangement in a molecule.
- It also provides the necessary information to determine the molecular shape as well as some idea of the physical properties.
- Each dot represent 1 electron while each bond (line) represent 2 electrons.

Steps for Lewis Diagram

1. Determine the total number of valence electrons in the molecule.

2. Determine how many electrons are required to complete the outer atoms.

3. Step 1 - Step 2 to determine the number of non-bonding electrons in the central atom.

4. Create double bonds until the central atom contain 8 electrons (or 6 for Boron)

5. Fill the outer atoms with the remaining electrons.

Example

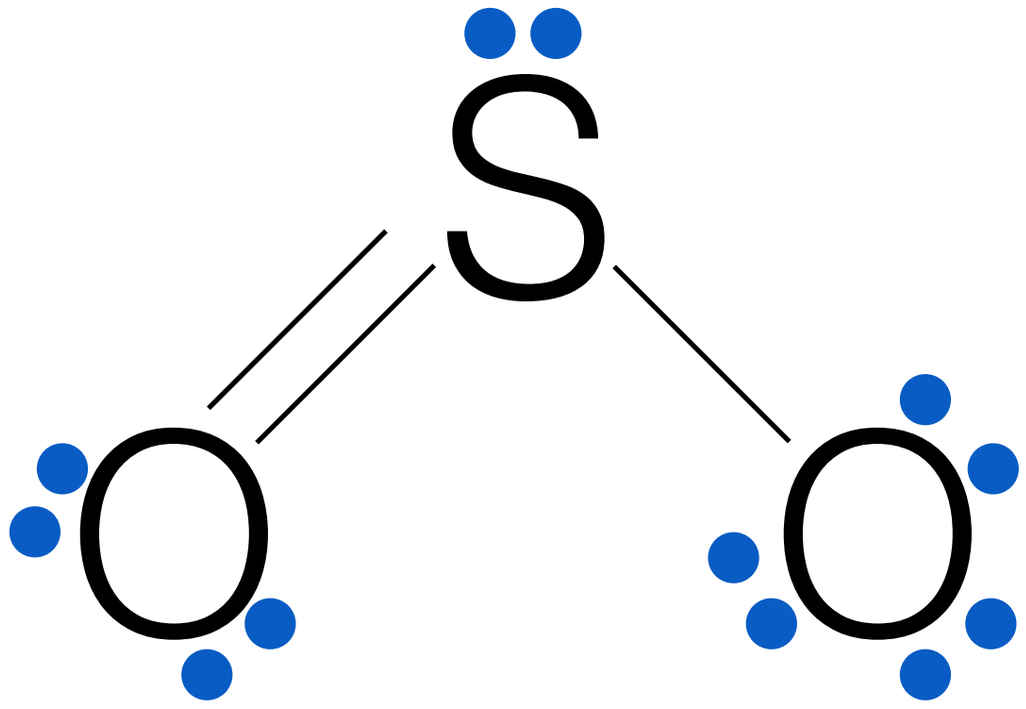
- Sulfur dioxide SO_2

1. Total number of valence electrons = 18

2. Electrons require for outer atom = 16

3. Non-bonding electrons = 2

- There only 6 electrons in the central atom



Try these

- Water H_2O
- Methanal H_2CO
- Ozone O_3
- Tetra chloro methane CCl_4
- Carbon dioxide CO_2