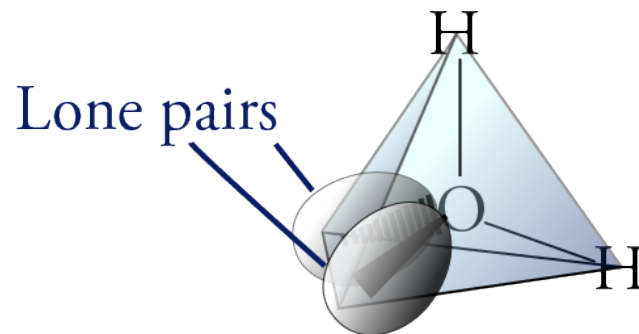
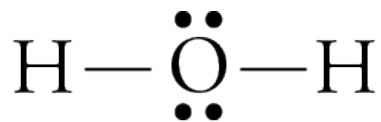


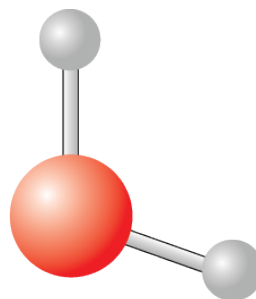
# Water, H<sub>2</sub>O



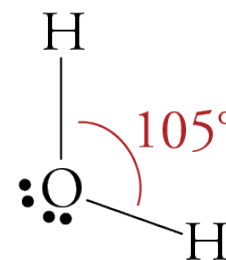
Electron group geometry  
(tetrahedral)



Space-filling model



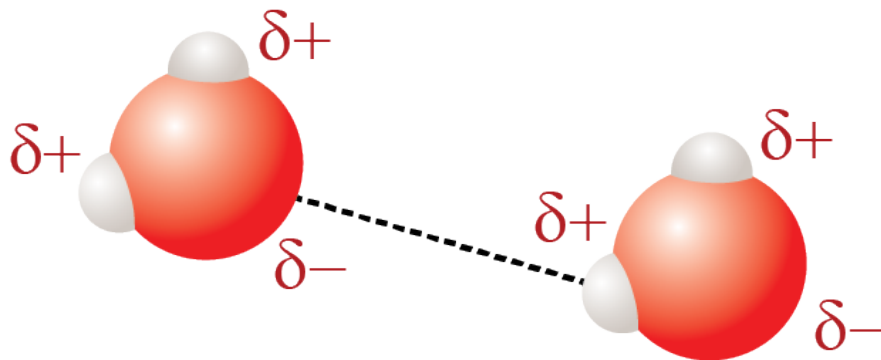
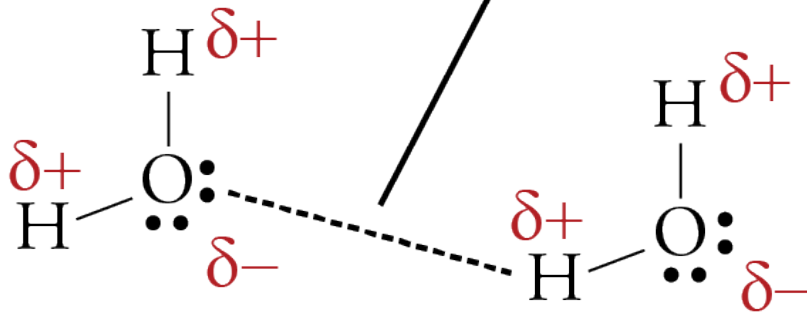
Ball-and-stick model



Geometric Sketch

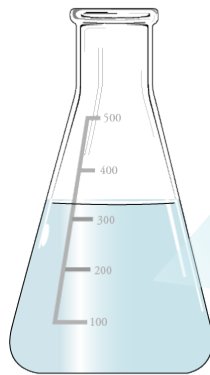
# Water Attractions

Attraction between partial positive charge and partial negative charge



# Liquid Water

Attractions exist between hydrogen and oxygen atoms of different water molecules.



Molecules break old attractions and make new ones as they tumble throughout the container.

# Mixtures



- A ***heterogeneous mixture*** has two or more phases that each have a unique composition.
  - Beach sand is an example.
- A ***homogeneous mixture*** is composed of two or more substances but only one phase. Because the particles of the different substances are completely mixed down to the particle level, the composition of the mixture is the same throughout.
  - Filtered air is an example.

# Solutions

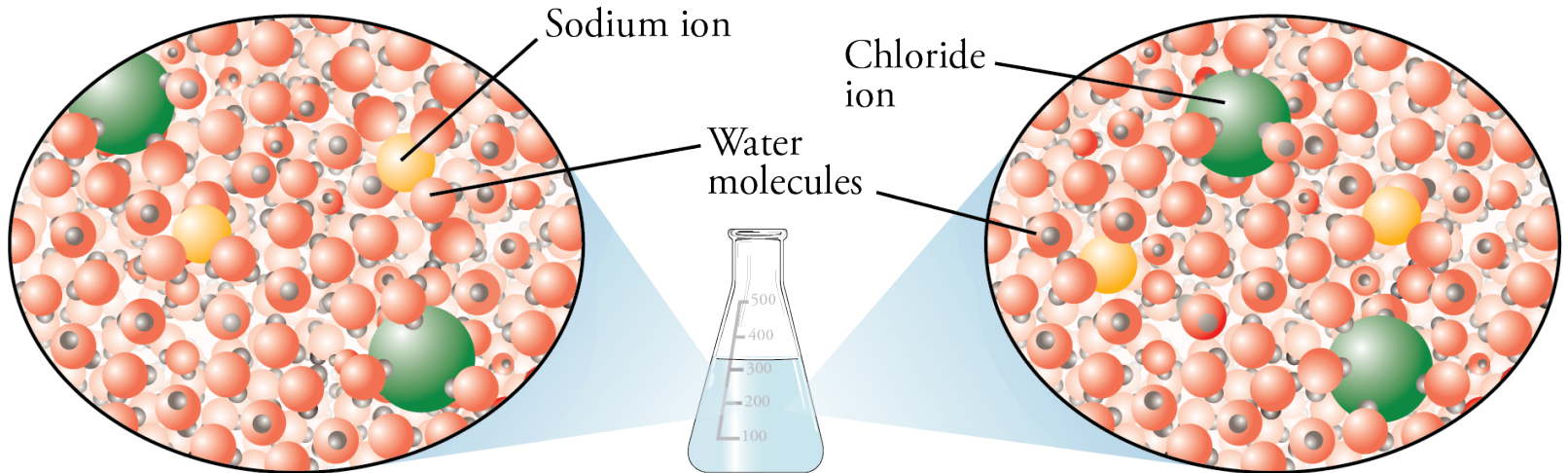


- A ***solution***, also called a homogeneous mixture, is a mixture whose particles are so evenly distributed that the relative concentrations of the components are the same throughout.
- Water solutions are called ***aqueous solutions***.

# Solution (Homogeneous Mixture)

All parts have the same composition.

All parts taste equally salty.

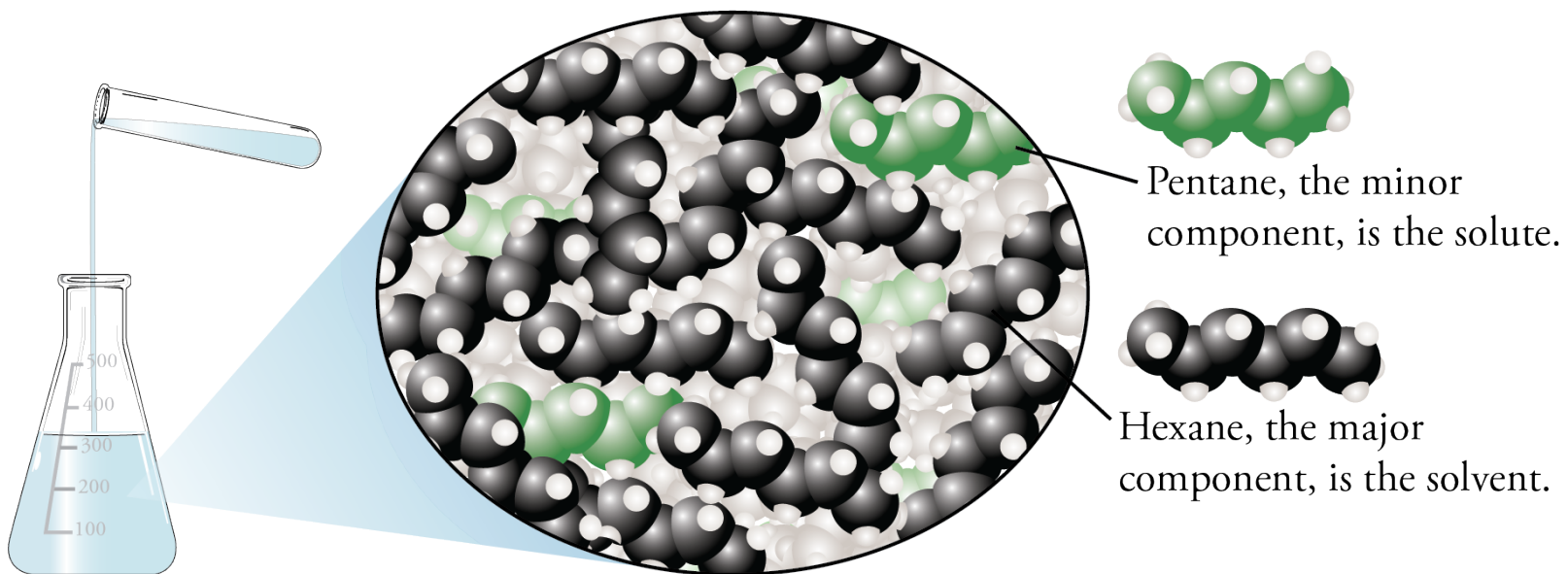


In a salt water solution, the water, sodium ions, and chloride ions are mixed evenly throughout.

# Solute and Solvent

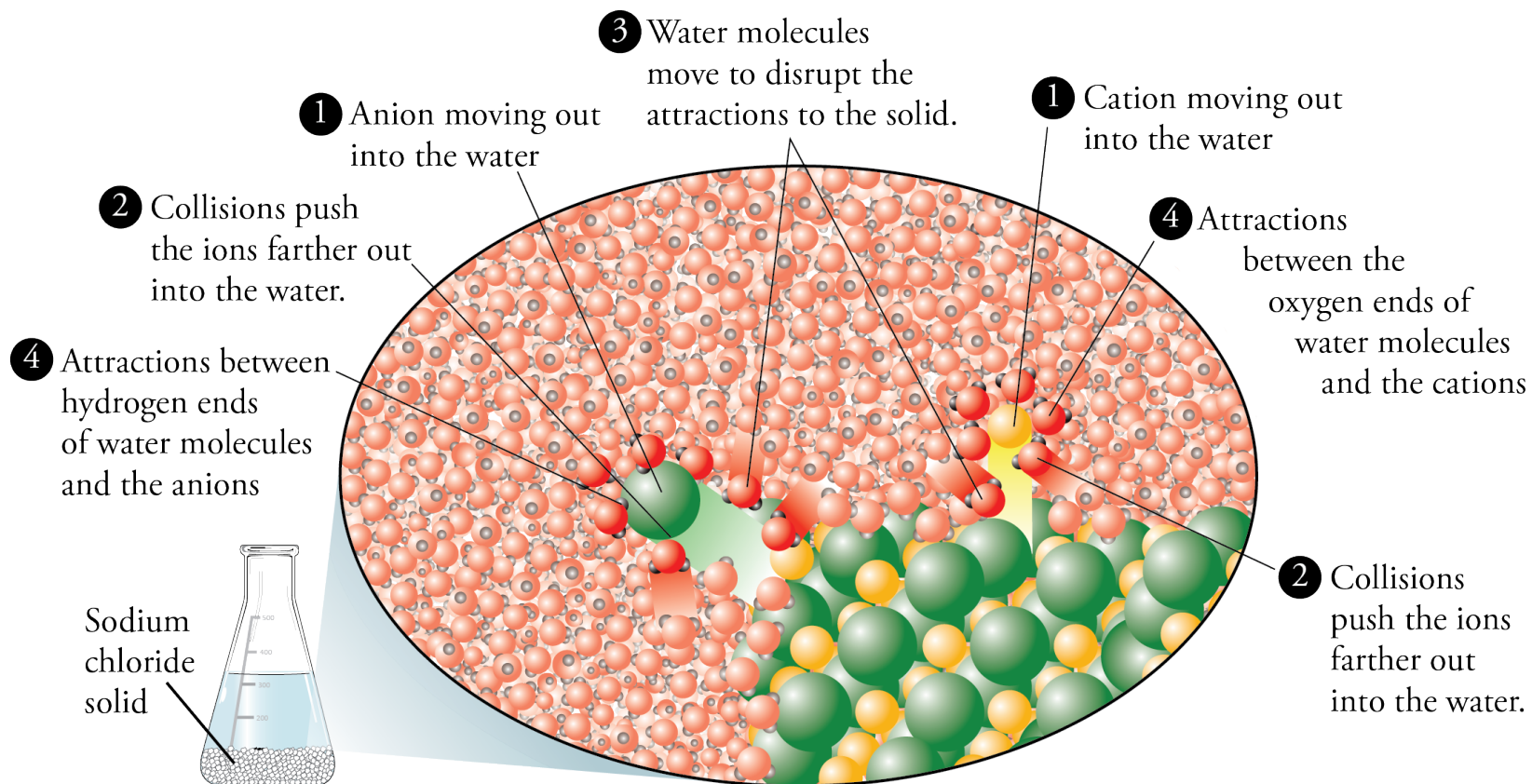
- In solutions of solids dissolved in liquids, we call the solid the ***solute*** and the liquid the ***solvent***.
- In solutions of gases in liquids, we call the gas the ***solute*** and the liquid the ***solvent***.
- In other solutions, we call the minor component the ***solute*** and the major component the ***solvent***.

# Liquid-Liquid Solution





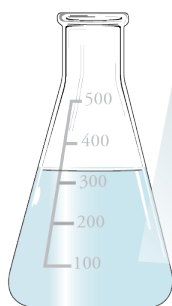
# Solution of an Ionic Compound



# Solution of an Ionic Compound (cont.)

Cations surrounded by the negatively charged oxygen ends of water molecules

Anions surrounded by the positively charged hydrogen ends of water molecules



Sodium chloride solution