

# Classifying Matter





**Why is it possible for chemistry  
connects to everything around  
us?**



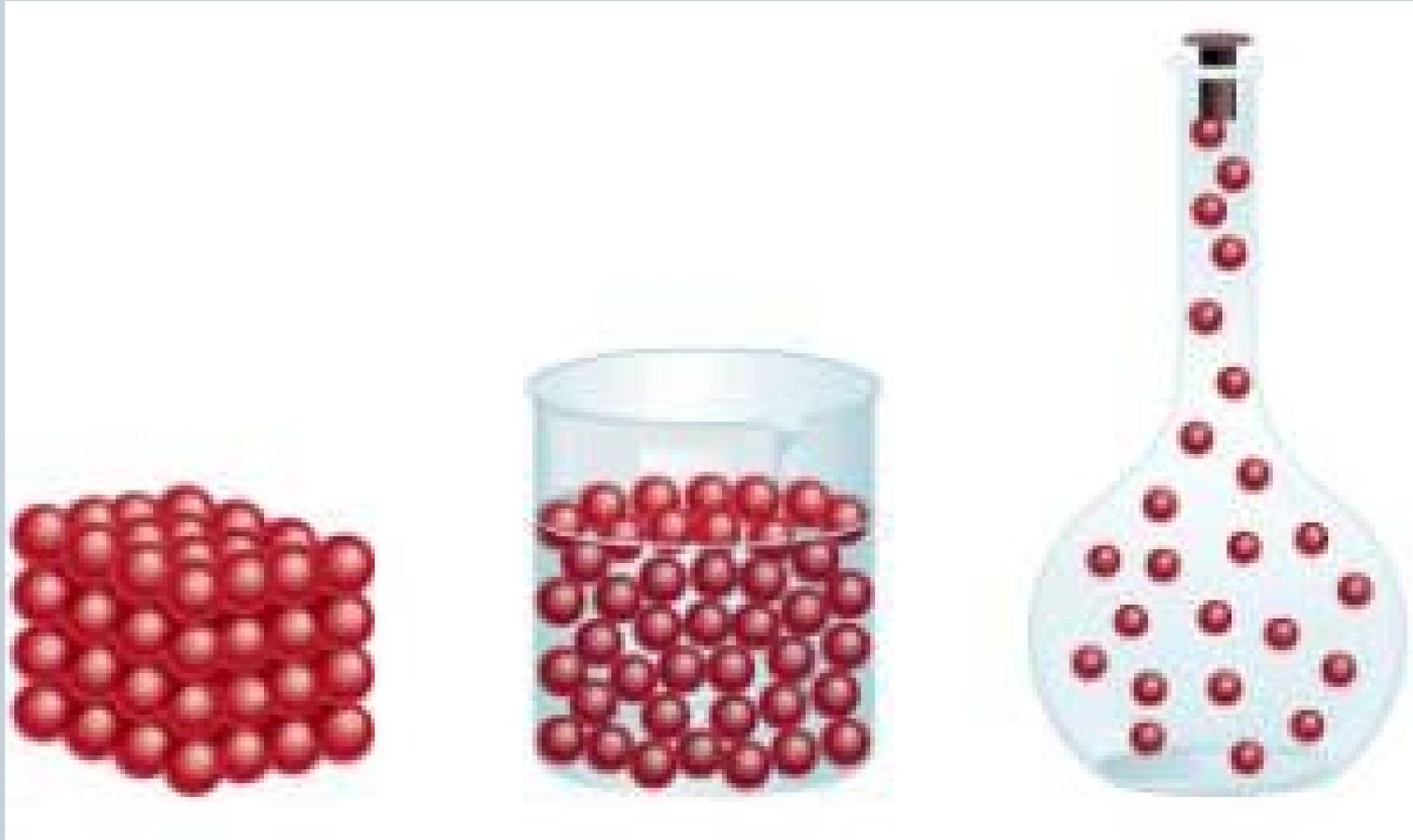
- Chemistry is the study of the composition of matter and the changes matter can undergo
- But what exactly is **matter**???

# Matter is...



- Basically matter is anything that has mass and occupies space.
  - Examples: trees, water, buildings, air
- In short, **EVERYTHING** around you is made of matter!

# 3 Stages of Matter



# Solid



- **Properties of a solid include:**
  - Definite shape and volume
  - Shape does not depend on size of container
  - Particles packed closely together often in an ordered arrangement

# Liquid



- **Properties of a Liquid include:**
  - Particles in close contact but not arranged in orderly fashion
  - *Takes shape, but not volume, of container its in*
  - Indefinite shape and flows, yet has fixed volume

# Gas



- **Properties of a gas include:**
  - Takes shape of container
  - Expands to fill any volume
  - Particles are far apart
  - Compressible

# Can we separate matter?



- If we can separate matter, that means it is a **mixture**.
- If we cannot separate matter, it is called a **pure substance**.

# Mixtures



- Mixture – physical blend of two or more components
- Most samples are mixtures.
  - Chicken noodle soup
  - Italian salad dressing
  - Milk
  - Air
  - Can you think of any others?





- **Do all these mixtures look the same?**
- **How does the distribution of their components look?**

# Classifying Mixtures



- Based on the distribution of their components, mixtures can be either:

**Heterogeneous**

**Homogeneous**

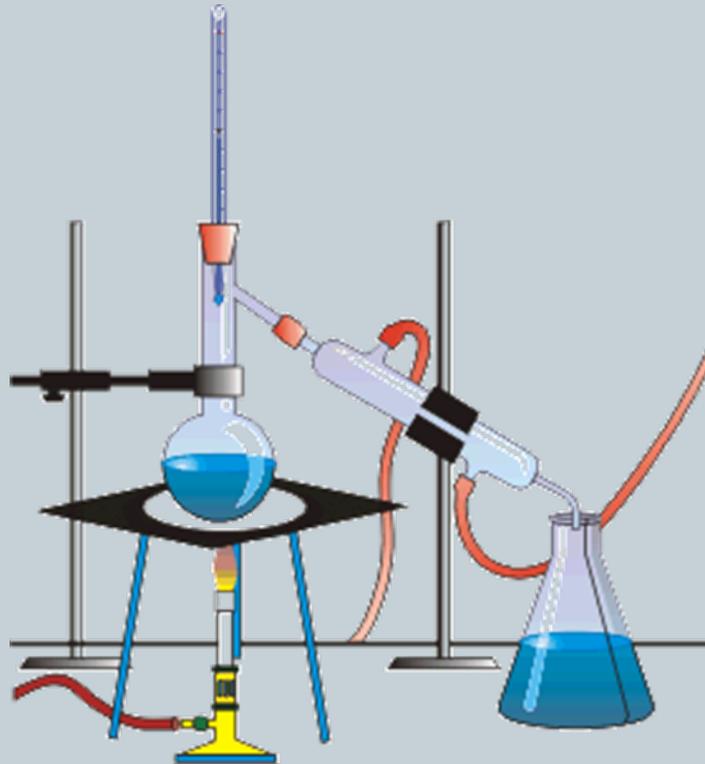


**Let's Classify!**  
**... To the Smart Board**

# How can we separate mixtures?



- **Filtration**
  - Think about how you make coffee
- **Distillation**
  - Purifying water
- **Chromatography**



# Pure Substances



- Pure Substance - a chemical substance is a material with a specific chemical composition

- Examples

- Gold

- Silver

- Salt (NaCl)

- Deionized water (H<sub>2</sub>O)



# Classifying Pure Substances



- Based on their chemical composition, pure substances can be either:

Elements

Compounds