

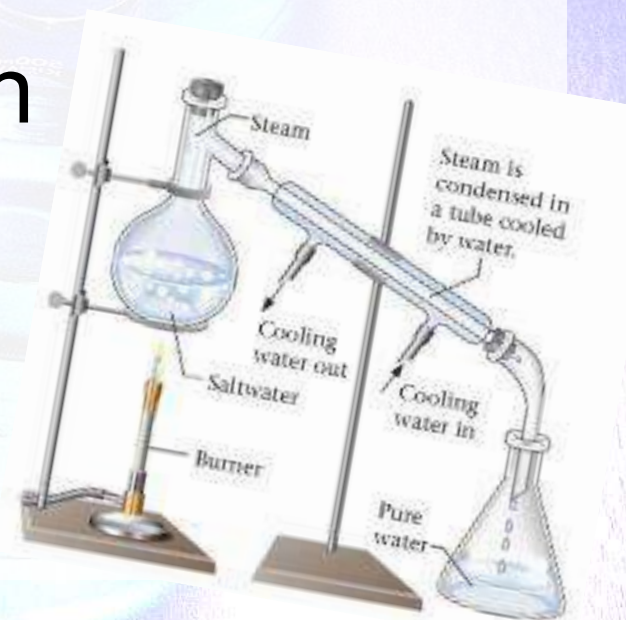
The background of the slide features a collection of chemistry glassware, including several Erlenmeyer flasks and a graduated cylinder. The flasks contain liquids of various colors: yellow, orange, and blue. One flask in the center has a glass rod or stirrer inside it. The glassware is arranged in a cluster, with some flasks in the foreground and others in the background, creating a sense of depth. The overall lighting is bright, highlighting the glass and the colors of the liquids.

Matter

Separation of Mixtures

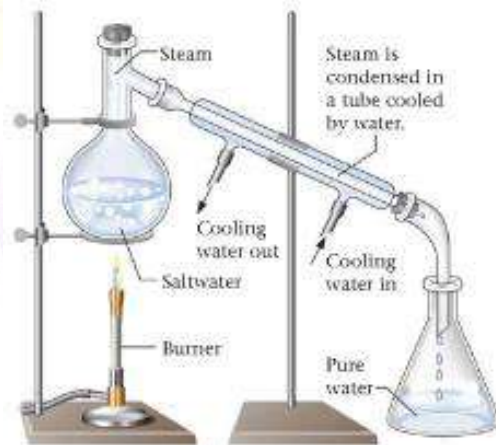
Separation of Mixtures

- Most of the matter found in nature is a mixture of pure substances.
- One method of separating mixtures is called distillation.
- **Distillation** → a separation process that depends on the different boiling points of the substances.



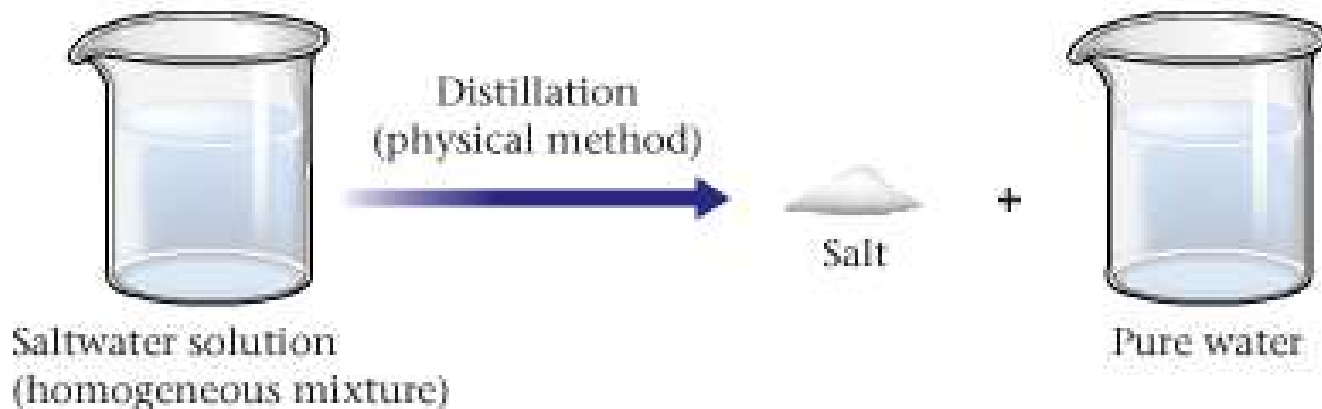
Separation of Mixtures

- Water is separated from the minerals by boiling, which changes the water to steam (gaseous water) and leaves the minerals behind as solids.
- If we collect and cool the steam, it condenses to pure water.



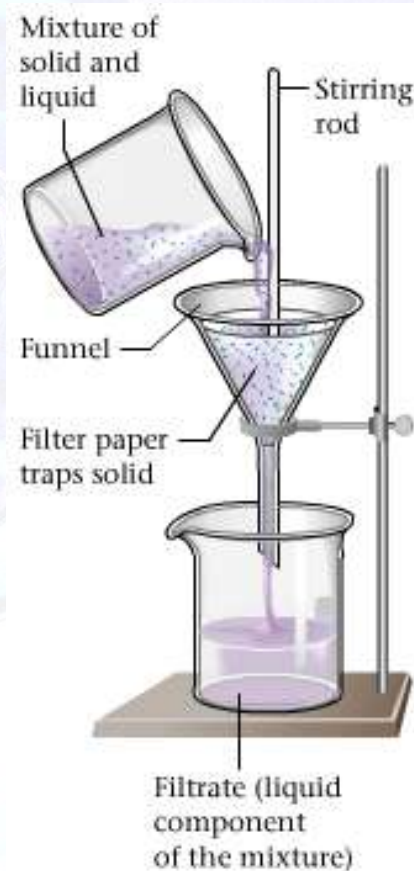
Separation of Mixtures

- In distillation, the change of water from a liquid to a gas and then back to a liquid are examples of changes of state.
- Changes of state are examples of physical changes and do not change the composition of the individual substances.



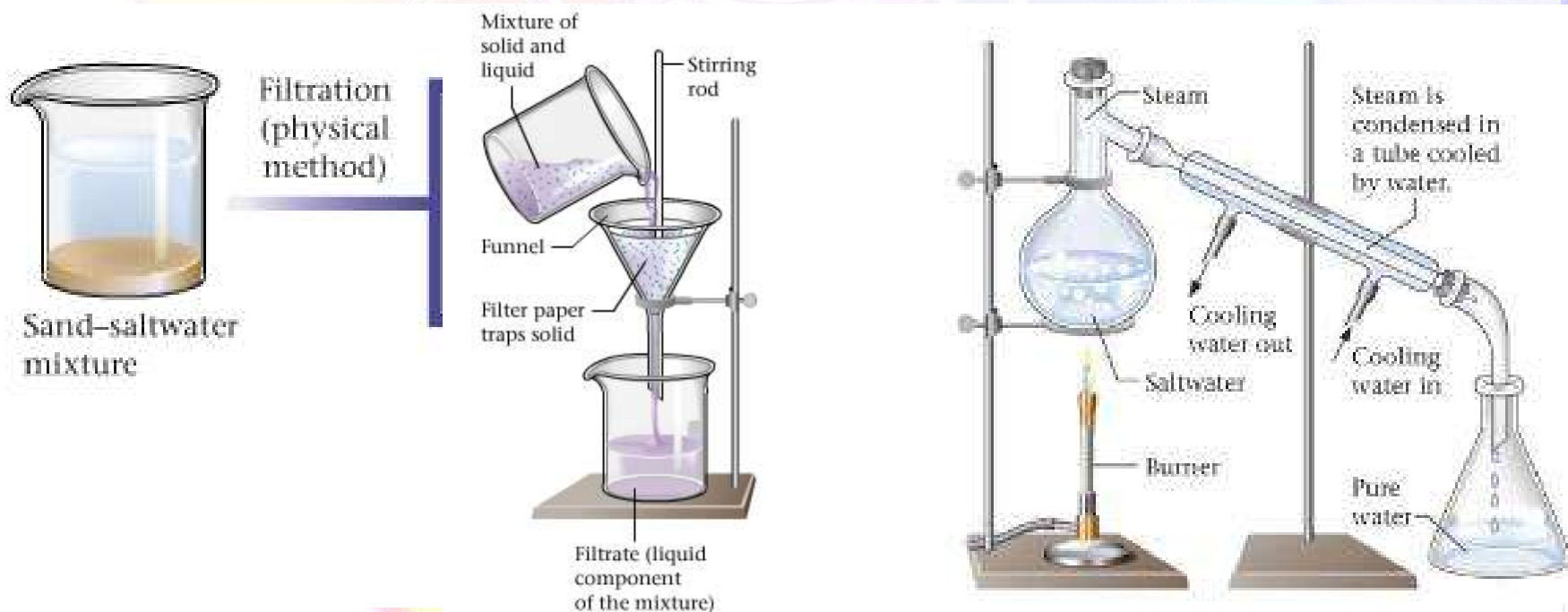
Separation of Mixtures

- A second method of separating mixtures is called filtration.
- **Filtration** → separation of a solid from a liquid by using filter paper.
 - Pour the mixture onto a mesh (or filter paper), which allows the liquid to pass through and leaves the solid behind.



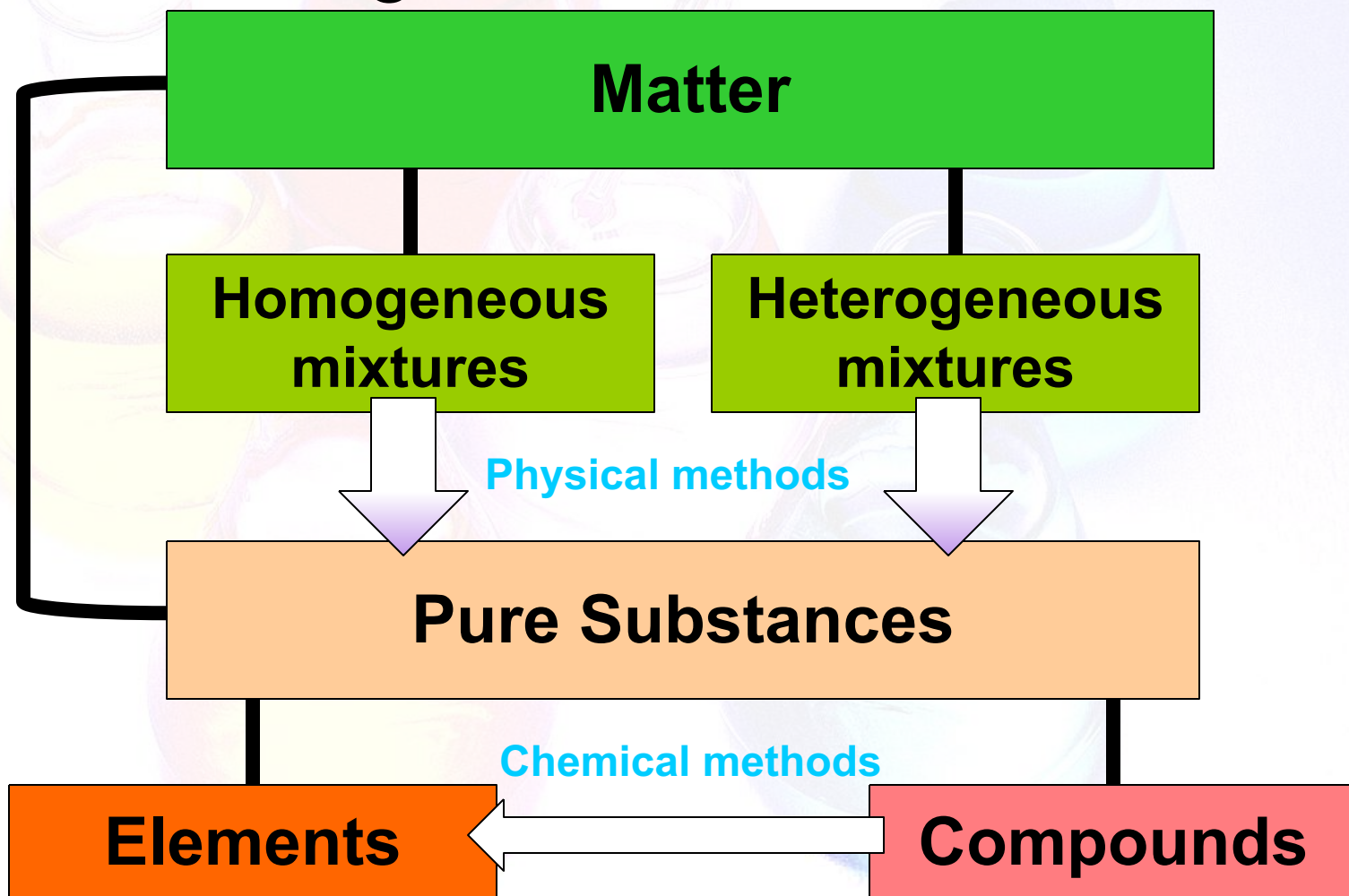
Separation of Mixtures

- A mixture may require multiple methods of separation before the pure substances are extracted.



Separation of Mixtures

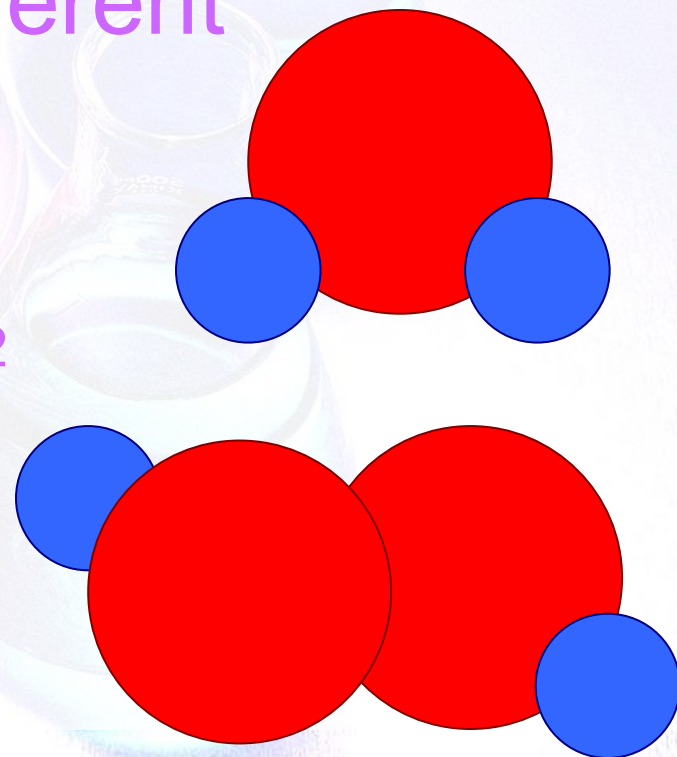
The Organization of Matter



Separation of Mixtures

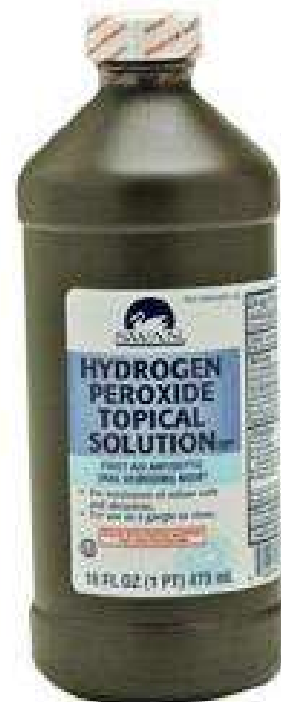
Celebrity Chemical: Hydrogen Peroxide (H_2O_2)

- Hydrogen and oxygen atoms can combine to form two different molecules:
 - Water H_2O
 - Hydrogen peroxide H_2O_2
- Their Properties are very different!



Separation of Mixtures

- Hydrogen peroxide is a corrosive liquid.
- It would poison us if we drank it!
- Commonly used as a bleaching agent for hair, fibers, flour, teeth, and bones.
 - Reacts with melanin in hair, causing it to lose its brown or black color, turning brown hair blonde.
 - A whitening agent in toothpastes.
- Used for its *antiseptic* (kills microorganisms) properties to prevent infection in cuts.



The End

