



Introduction



■ List the Major Types of MATERIALS

✿ Metals

✿ Ceramics

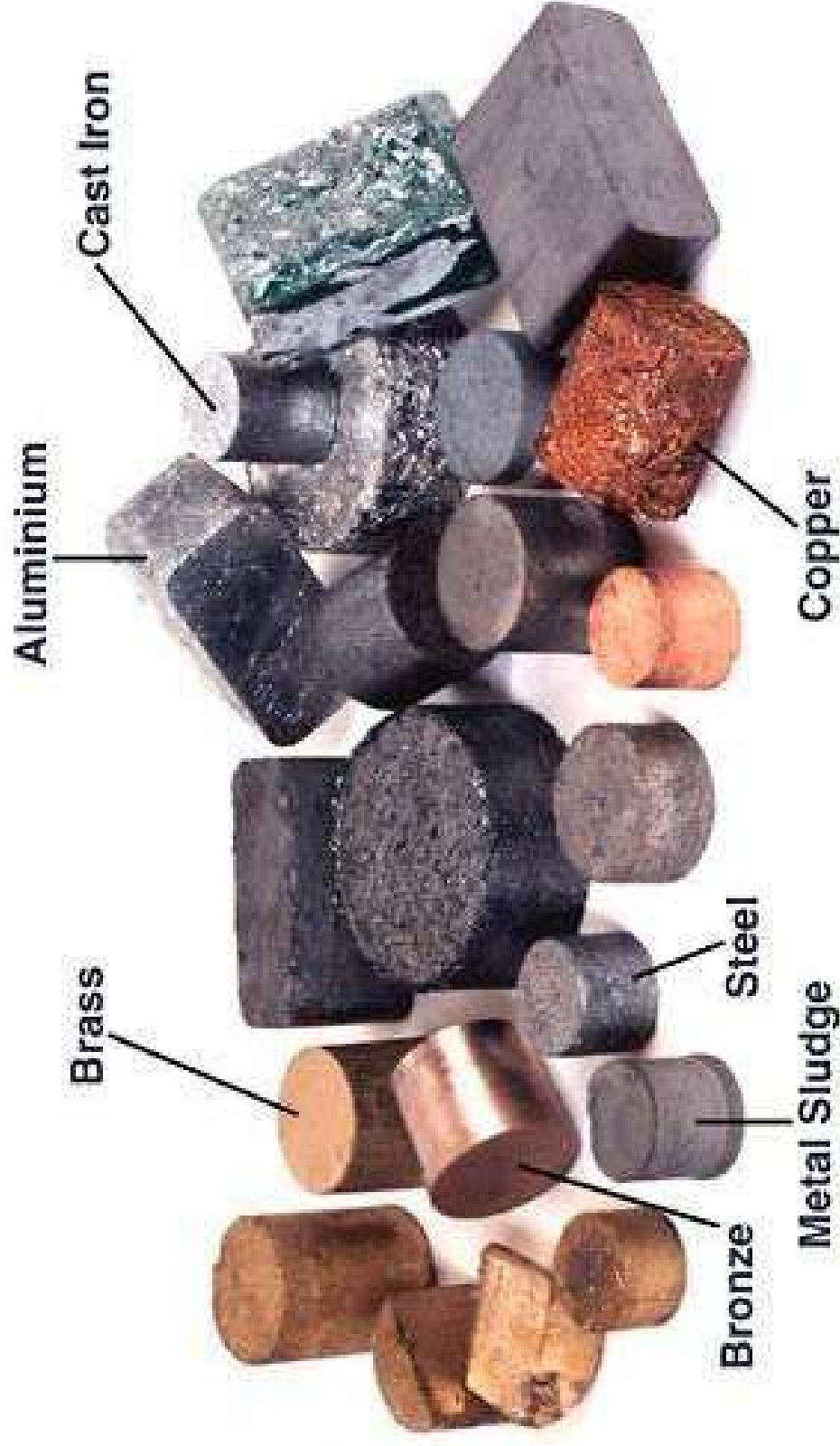
✿ Polymers

✿ Composites

✿ Advanced materials

 Adamantine	 Brass	 Bronze	 Copper	 Electrum
 Gold	 Mithral	 Platinum	 Silver	 Steel

Introduction





Alloys



- An alloy is a mixture of two or more metals or non metals
- The element which is present in the largest proportion is called the **base metal**, and all other elements present are called **alloying elements**



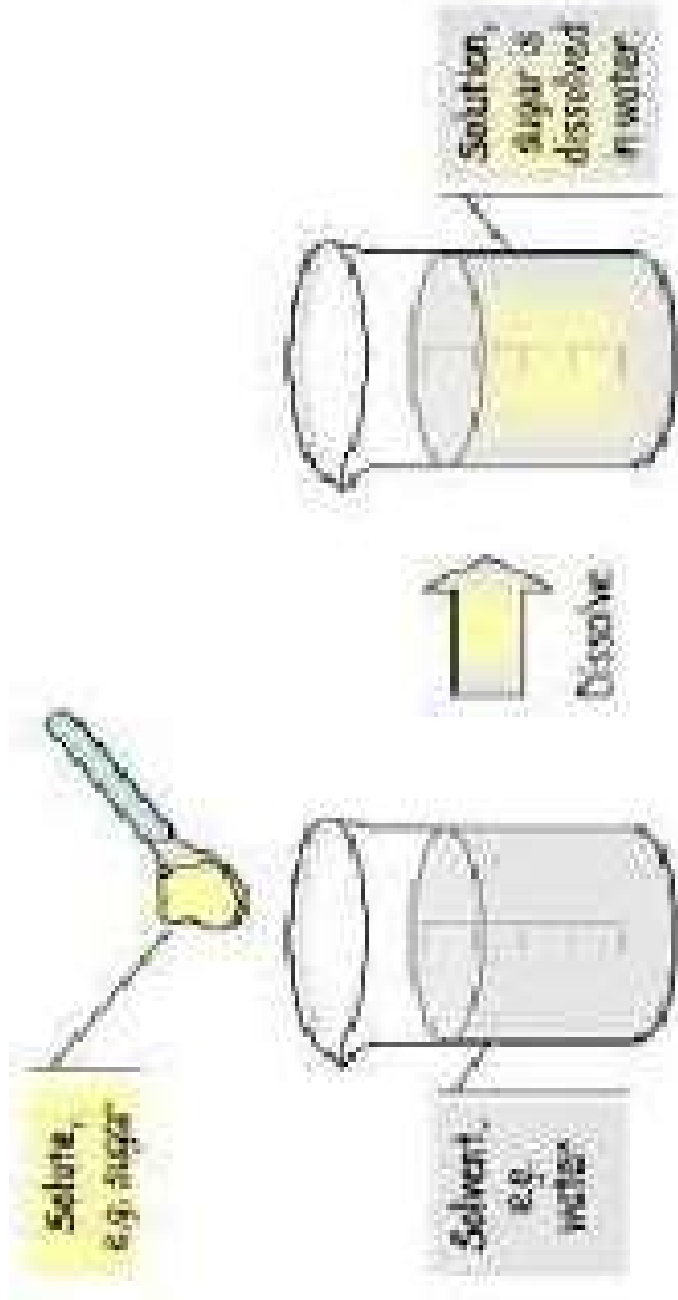


Solid Solutions



- **Solution**
 - A solution is a homogeneous mixture composed of two or more substances. In such a mixture, a solute is a substance dissolved in another substance, known as a solvent.
 - The solvent is a chemical substance and can be in a solid, liquid or gaseous state. Thus solution can exist in a gaseous, liquid or solid state.

Solid Solutions



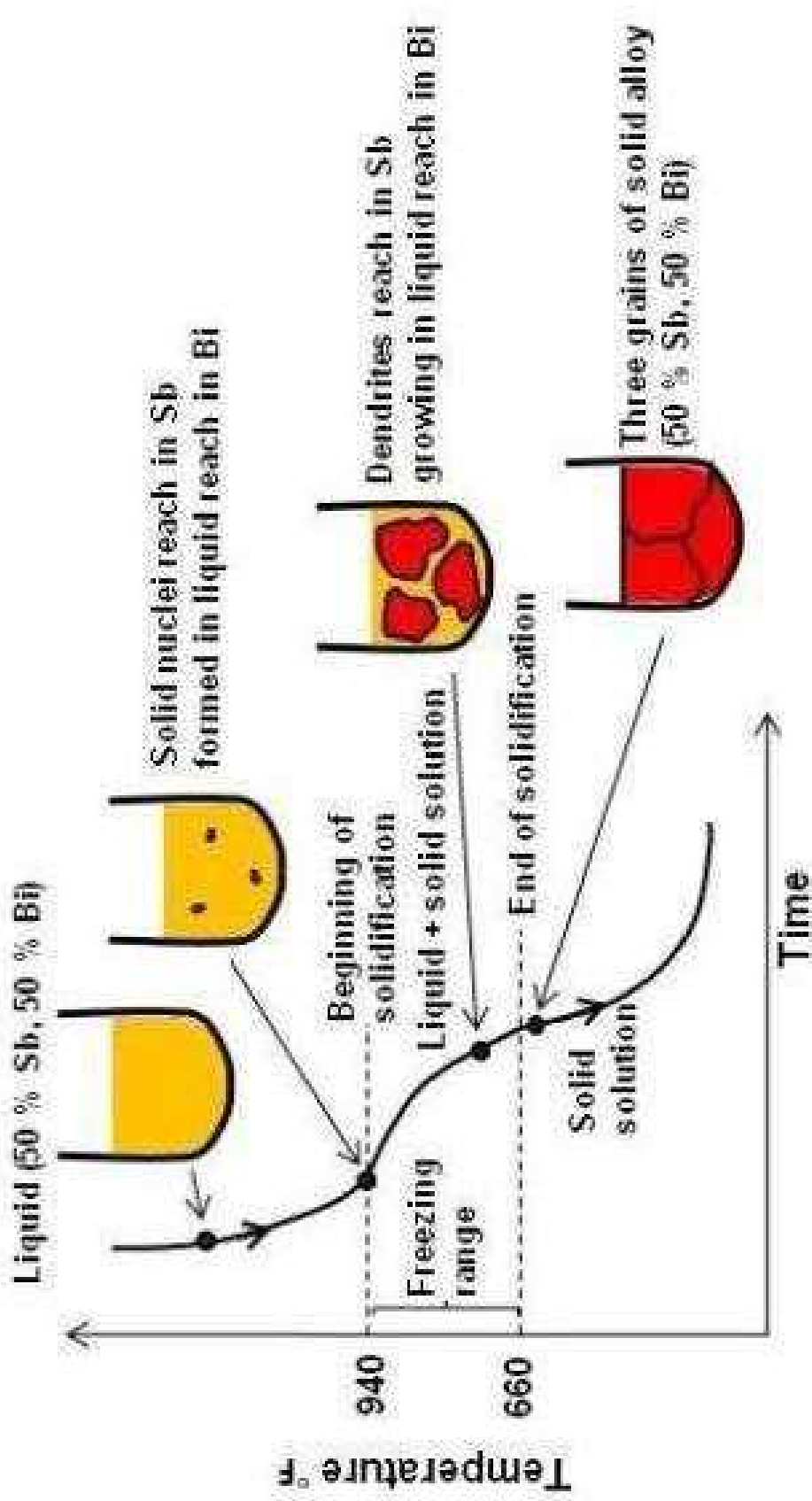


Solid Solutions



- A solid solution may be defined as a solid that consists of two or more elements atomically dispersed in a single-phase structure
- The amount of solute that may be dissolved by the solvent is generally a function of temperature (with pressure constant) and usually increases with increasing temperature

Solid Solutions



Cooling Curve for the solidification of 50 % antimony and 50 % bismuth alloy
(Cooling Curve for an Alloy)