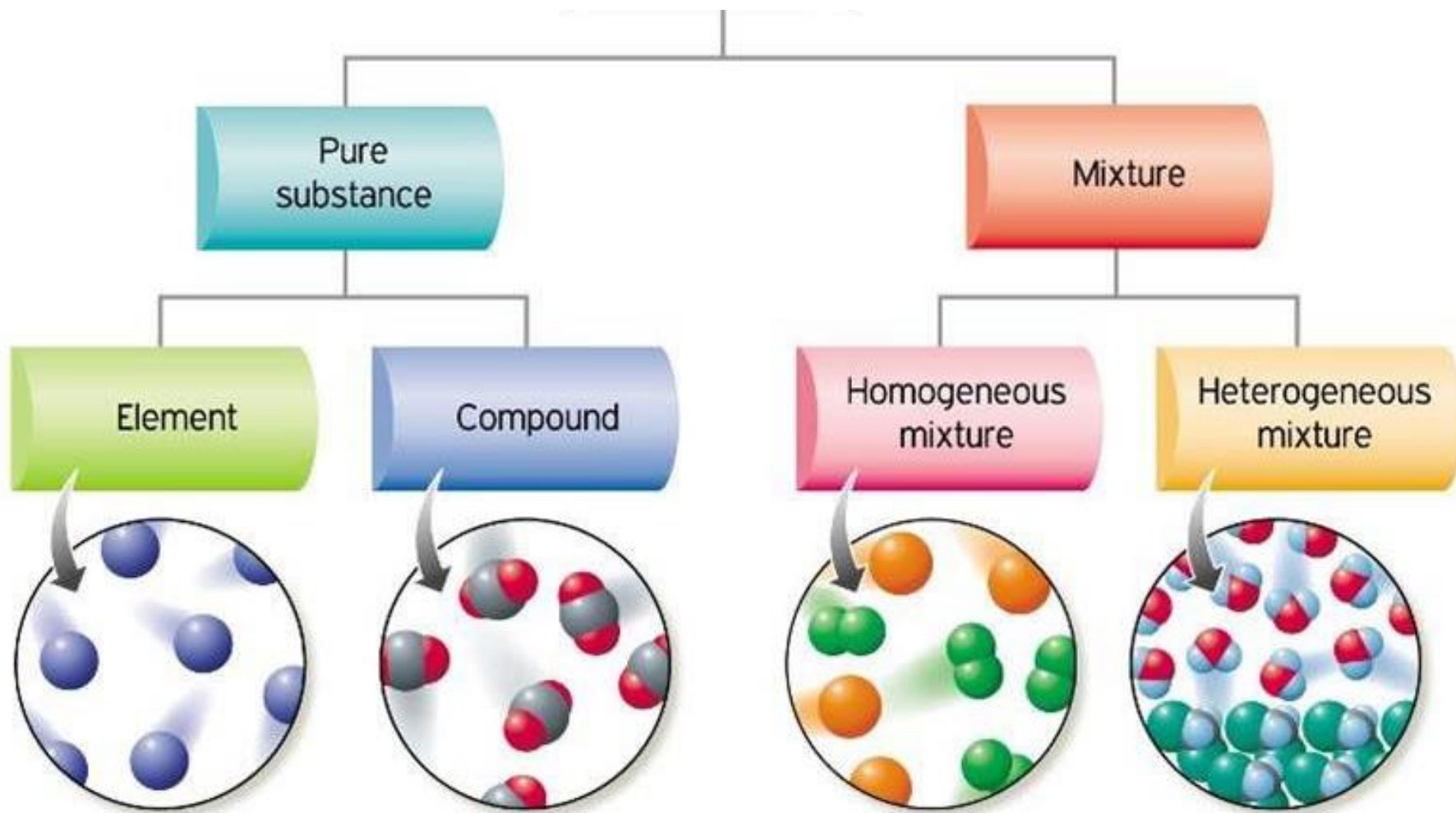
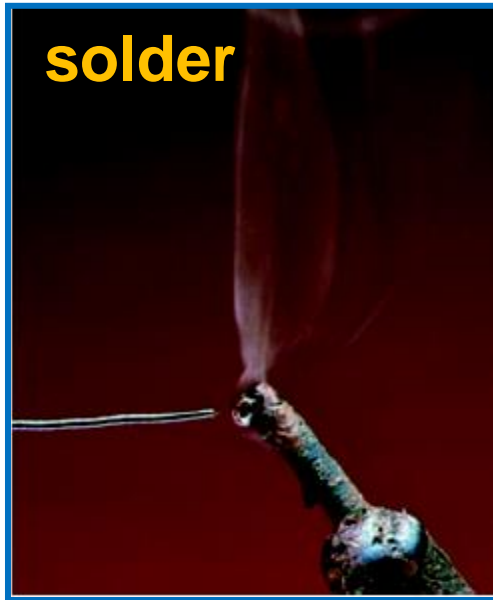


Chemical Substances



Types of Mixtures

- **Homogeneous** – composition of the mixture is the same throughout; only one state of matter is present.



- **Heterogeneous** – composition is not uniform throughout.



Element, Compound, or Mixture?



Rocks



Neon Gas

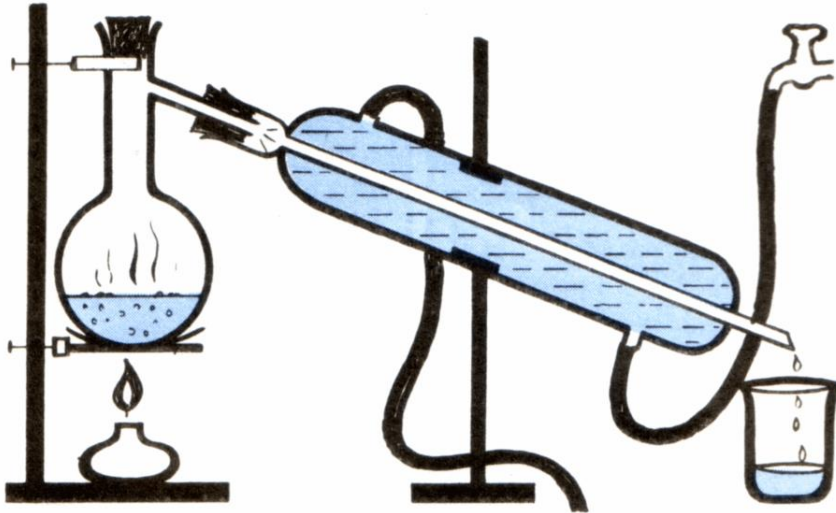


Table Sugar



Sweet Tea

Physical change can be used to
separate a mixture into its components by
exploiting their ***different physical properties***.



To separate **sweet water**
(water with sugar dissolved in it):
boil the water,
collect the vapor
and sugar crystals

To separate **iron particles from sand mixture**: use a magnet.



What kind of mixtures are these?

How many states of matter?

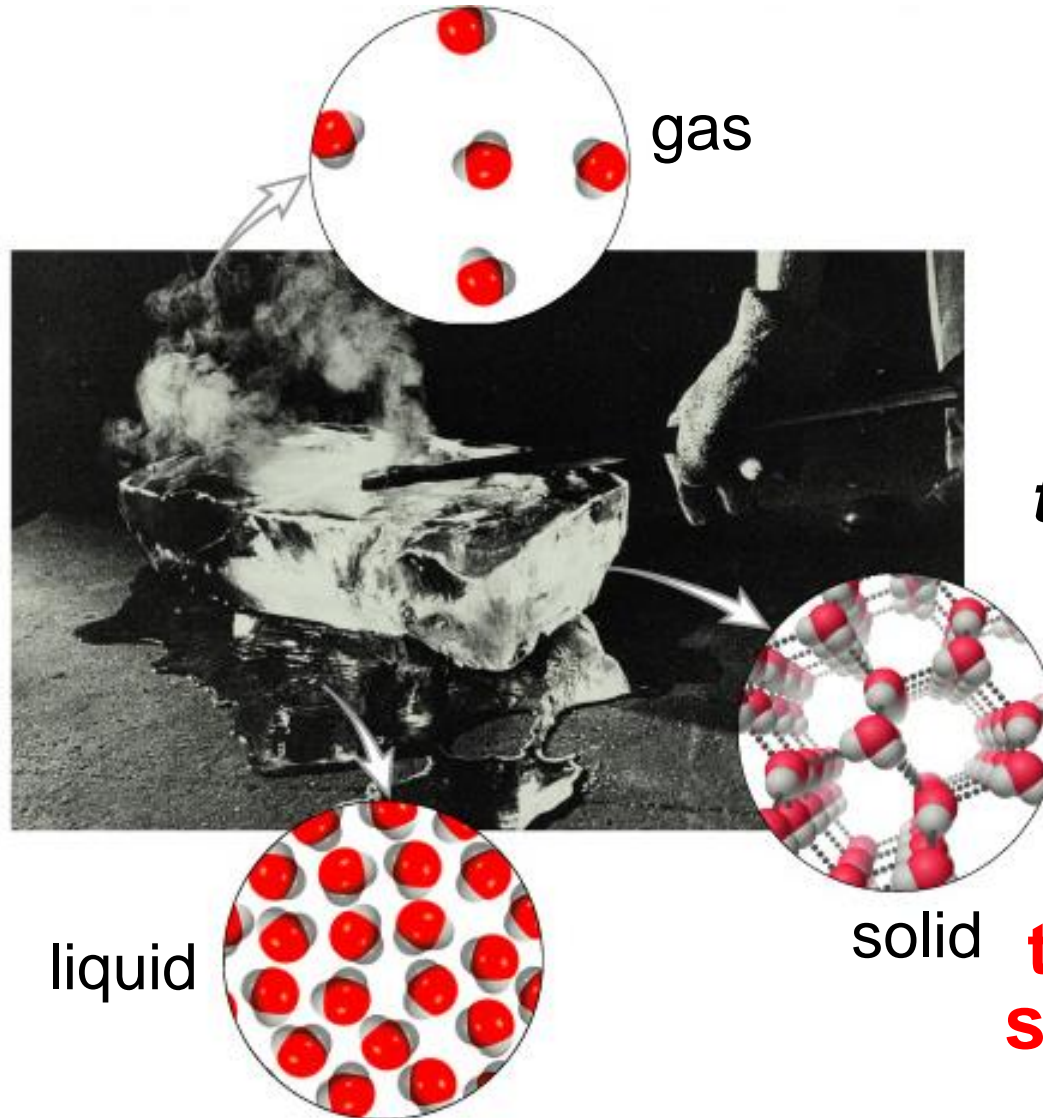


Can you spot a *change*?

Physical Change

Effect of a Hot Poker on a Block of Ice

A change from **one state of matter to another...**

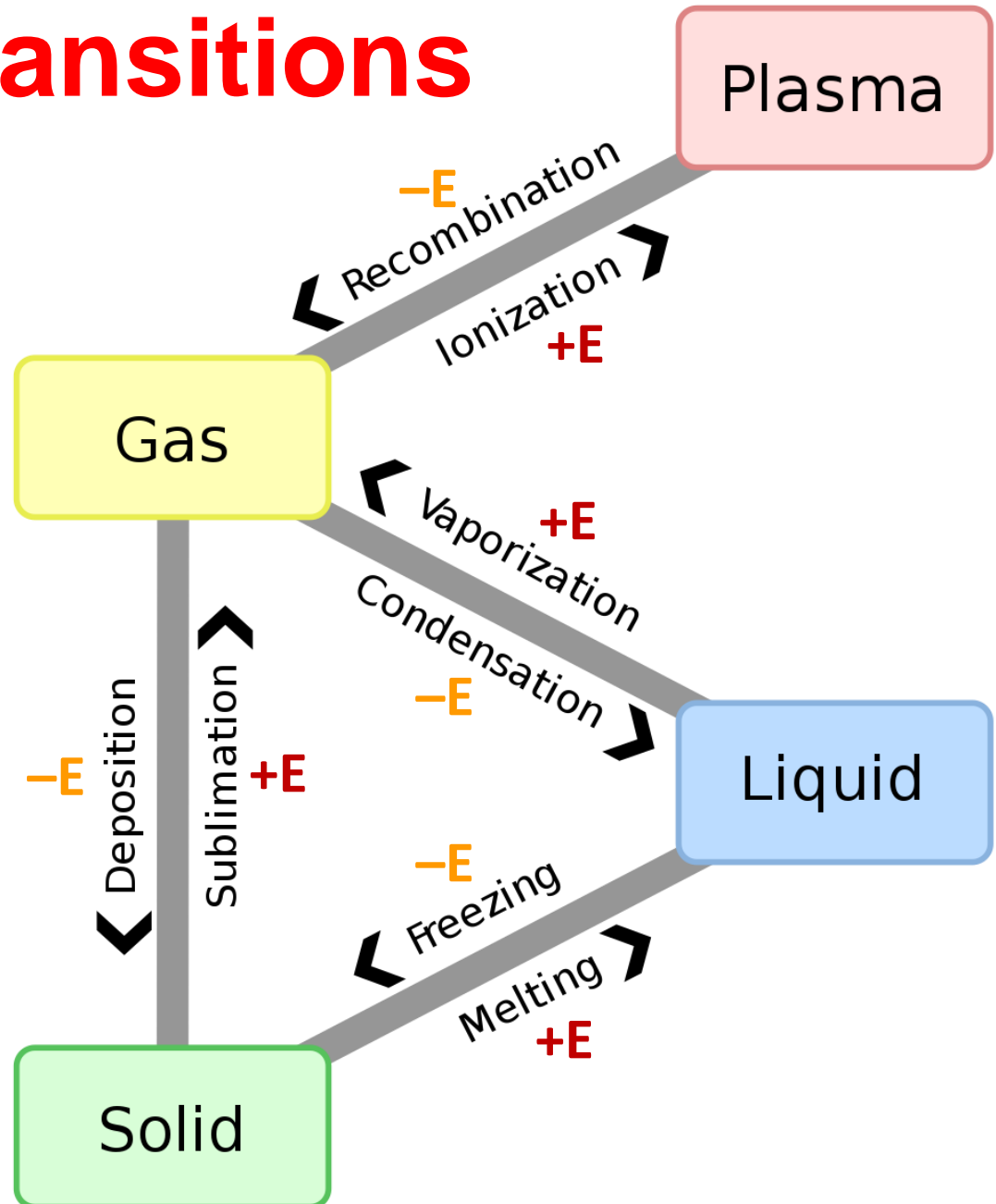


...is called a ***phase transition.***

But it's all the SAME substance!

Phase Transitions

- A phase transition is the transformation from one phase or state of matter to another one by heat transfer.
- Heat can be absorbed (+E) or released (-E) by a substance as it changes structure.
- A phase transition can be recognized by an abrupt change in physical properties.



Phase Transition Examples

Dry Ice Sublimation



Freezing Lava



Frost Deposition



Dew Condensation



Physical

CHANGE
CHANGE

Chemical

A *physical change* does **NOT** alter the composition or identity of a substance.



sugar dissolving
in water

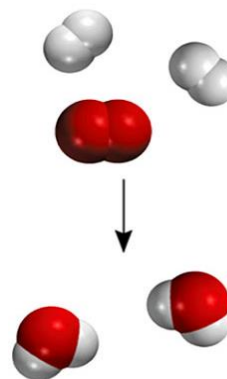


ice melting



VS

A *chemical change* does **alter** the composition or identity of the substance(s) involved.



hydrogen burns in
air to form water