

Unit 2

- **Matter, Elements, Compounds**
- **Pure substances**
- **Mixtures**
- **Physical Properties**
- **Chemical Properties**

Competencies

The student should be familiar and review the following definitions and terminologies:

- **the three states of matter**
- changes in states of matter
- **define the terms element and compound**
- **homogeneous and heterogeneous mixtures**
- separation techniques
- **physical and chemical changes/properties**
- boiling point and melting point

Matter

Matter has mass and occupies space.

States

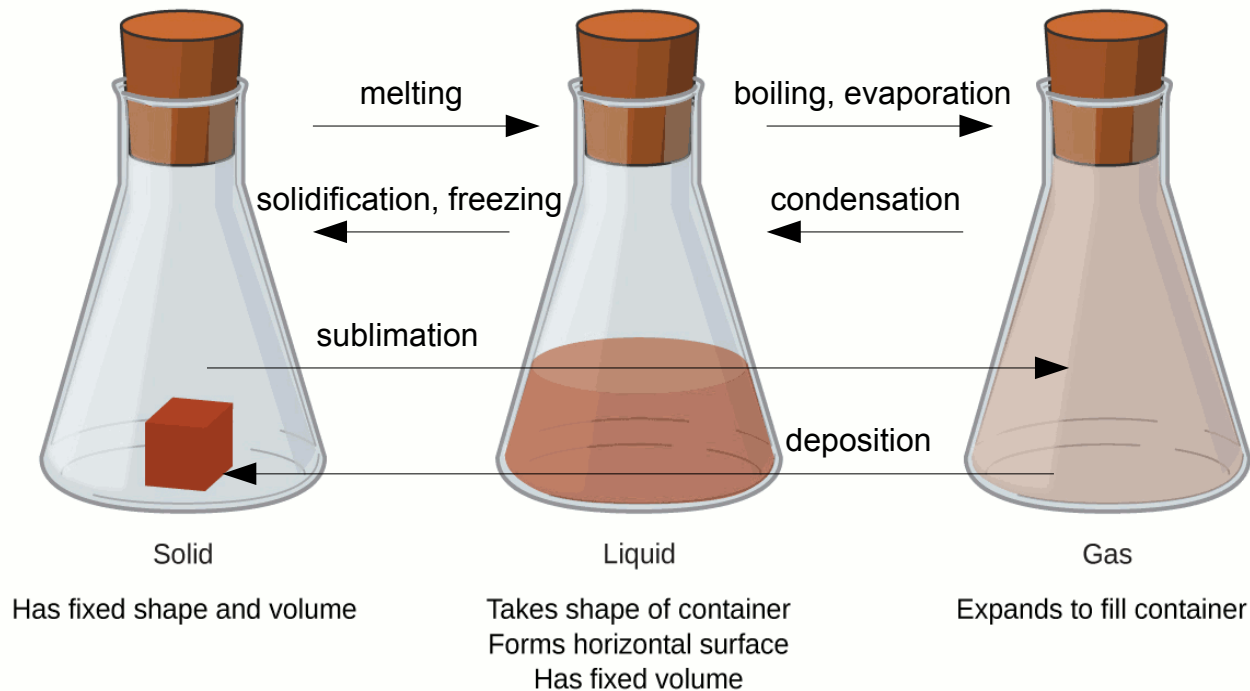


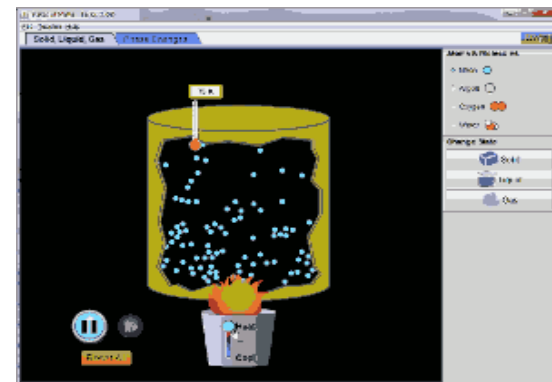
Image without state changes:

OpenStax College, Chemistry. OpenStax CNX. Oct 13, 2015

<http://cnx.org/contents/havxkyvS@9.110:jXI7O1iK@4/Phases-and-Classification-of-M>

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→ Do Unit II – Problem 1 and 7



Phet Simulation: <http://phet.colorado.edu/en/simulation/legacy/states-of-matter-basics>

Pure substances

- Pure substances:**
- Compound : One type of molecule that can be broken down into different elements.
 - Element : One type of atom that can not be broken down by chemical means.

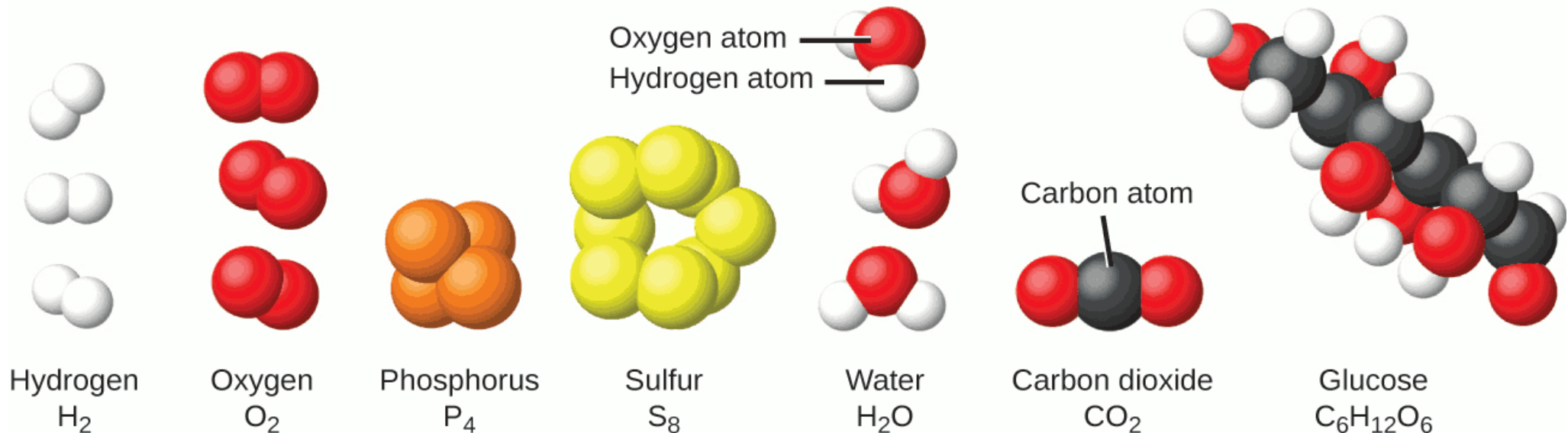


Image: OpenStax College, Chemistry. OpenStax CNX. Oct 13, 2015
<http://cnx.org/contents/havxkyvS@9.110:jXI7O1iK@4/Phases-and-Classification-of-M>
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Mixtures

Mixtures: At least two types of particles (atoms or molecules) that can be separated by physical methods

Heterogeneous



“Oil and Water” by Anne via Flickr

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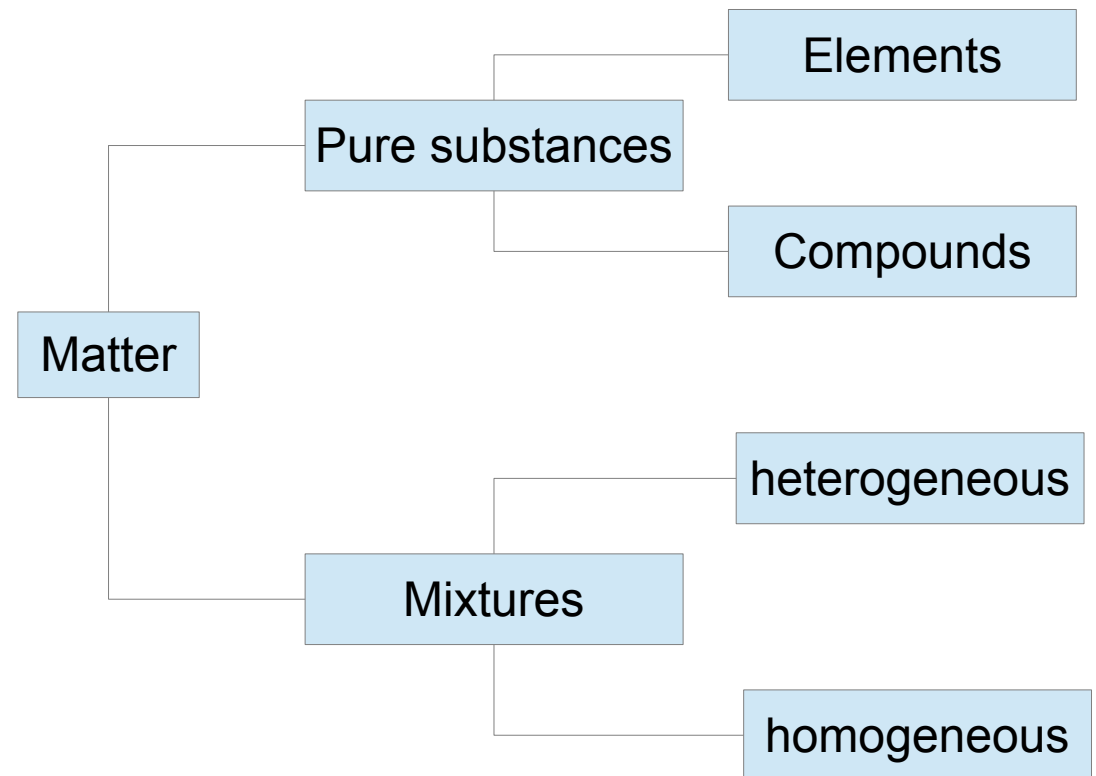
Homogeneous



“Tea” by Jeffrey Melton via Flickr

<https://www.flickr.com/photos/nofi/82182350/>

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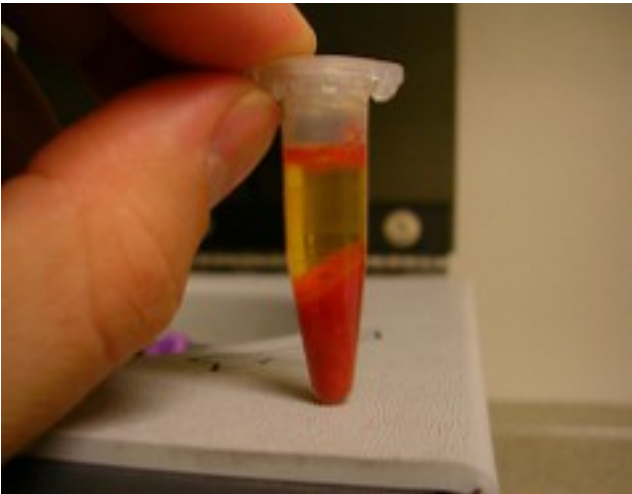


Mixtures

Mixtures: At least two types of particles (atoms or molecules) that can be separated by physical methods

Separation techniques:

- Decantation (Centrifugation)
- Filtration
- Distillation
- Evaporation



Centrifugation of Sriracha Sauce, Joseph Elsbernd via Flickr
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Distillation of Plum Brandy, brankomaster via Flickr
<https://www.flickr.com/photos/brankomaster/6059780549/>
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Characteristic Properties

Characteristic Properties: Help to precisely identify a substance

Physical Properties

- Melting/ Boiling point
- Density
- ...

Physical Change

- Change in state
- Change in shape
- ...



Image: Jonas Löwgren via Flickr
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Chemical Properties

- Can burn
- Can rust
- ...

Chemical Change

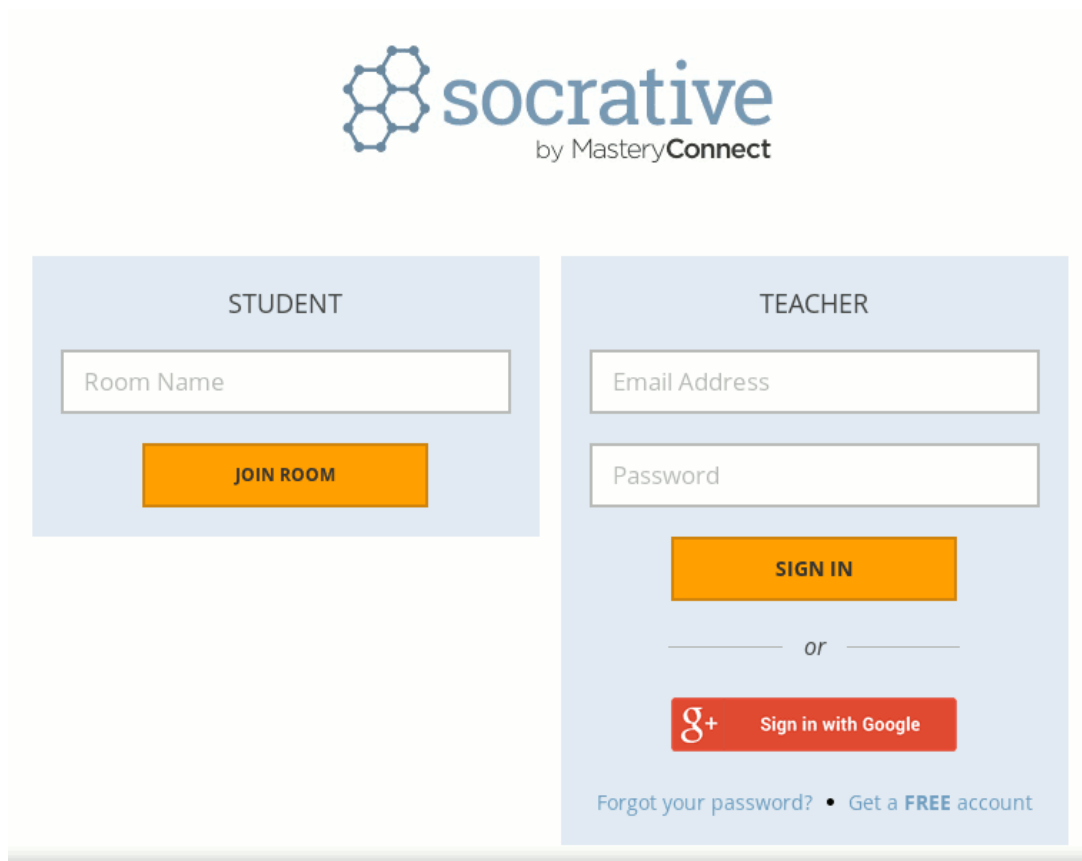
- Burning of wood
- Rusting
- ...



Image: Thomas's Pics via Flickr
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Clicker Review Activity : Sec 4 – Matter

<http://b.socrative.com>



The screenshot shows the Socrative login interface. At the top center is the Socrative logo, which consists of a blue hexagonal molecular-like structure followed by the word "socrative" in a blue sans-serif font, and "by MasteryConnect" in a smaller, lighter blue font below it. Below the logo, there are two main columns. The left column is titled "STUDENT" and contains a white text input field labeled "Room Name" and an orange button labeled "JOIN ROOM". The right column is titled "TEACHER" and contains a white text input field labeled "Email Address", another white text input field labeled "Password", and an orange button labeled "SIGN IN". Below the "SIGN IN" button is the word "or" flanked by horizontal lines. Underneath is a red button with the Google+ logo and the text "Sign in with Google". At the bottom of the teacher column, there is a link that says "Forgot your password?" followed by a bullet point and the text "Get a FREE account".

Additional Resources

- Phases and classification of Matter in „College Chemistry“
<http://cnx.org/contents/havxkyvS@9.110:jXI7O1iK@4/Phases-and-Classification-of-M>
- Physical and Chemical Properties in „College Chemistry“
<http://cnx.org/contents/havxkyvS@9.110:K8GxNtKE@4/Physical-and-Chemical-Properti>