

 **Introduction to Organic Chemistry**

Purpose: 1) to examine the underlying chemical structure of foods, 2) to burn stuff.

Procedure:

a. Get a paper label and two crucibles and a clay triangle.

b. Set up your retort stand with a ring clamp and a clay triangle. Position the fume hood to vent the smoke from the crucible (do not place it so close that it will be strongly heated by the Bunsen burner).

c. Light the Bunsen burner. Heat one crucible with a moderate flame. Place the other sample at the base of your retort stand (for comparison). When the reaction stops (no more smoke) turn off the Bunsen burner.

d. Circulate to the other lab stations to observe the effect of heating on other food items.

Questions:

1. What colour did most food substances change?
2. Look at the elements at the front of the room. Which element most resembles the product from burning? \_\_\_\_\_\_\_\_\_\_\_\_\_\_. This element was present in the molecules of the foods before burning.
3. What substance was an exception (it did not have the same reaction to burning)?

What elements are found in this compound? \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_. Thus, it did not turn the same colour as other foods because it did not contain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

e. Clean up: Put away all equipment. Return the crucibles and paper labels to the front of the room.

Questions: Using the iPads, answer the following questions.

1. In one sentence summarize the important contribution that Wöhler made to the field of organic chemistry.
2. Approximately how many organic compounds have been identified so far?
3. Organic chemistry is the study of compounds that contain carbon with the exception of \_\_\_\_\_, \_\_\_\_\_, and ionic compounds of the carbon containing polyatomic ions \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. List 3 items in this room that are organic (not including foods from this lab) & 3 items that are inorganic.

Organic:

Inorganic:

5. Define “hydrocarbons”.

6. Because C-C bonds and C-H bonds have a low ΔEN, hydrocarbon molecules are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This causes them to have a low \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in water. The only forces of attraction between hydrocarbon molecules are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 \_\_\_\_\_\_\_\_ \_\_\_\_\_\_ are formed from ancient plant and animal matter exposed to heat and pressure over time. The carbon in all organic molecules originates in plants. Only plants (and a few kinds of bacteria) can capture CO2 from the air and incorporate it into complex organic molecules.

7. What does “refining” mean?

8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is obtained by drilling. It consists of organic molecules with 1 to 40 carbon atoms.

9. Natural gas consists of organic molecules with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ carbon atoms.

10.Refined natural gas contains mostly methane. This is an odourless gas. However, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is added so that people (with the exception of Aunt Selma) can smell a gas leak.

11.The different components that make up crude oil are separated based on their different \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_ in a process called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12.Which part of a fractionating tower is the coolest? The warmest?

13. Which part of a fractionating tower holds the smallest molecules?