

# Introduction to Organic Chemistry



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

## Procedure:

- From the front of the room get a paper label and two crucibles (if there is a clay triangle take that too, otherwise you will be using the clay triangle from your lab station).
- 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).
- 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.
- Circulate to the other lab stations to observe the effect of heating on other food items.

## Questions:

- What colour did most food substances change? \_\_\_\_\_
  - 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.
  - 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: Read pages 506 – 507, 512 – 513. Answer all questions in the spaces provided on this sheet.

- In one sentence summarize the important contribution that Wöhler made to the field of organic chemistry. \_\_\_\_\_  
\_\_\_\_\_
- Approximately how many organic compounds have been identified so far? \_\_\_\_\_
- Organic chemistry is the study of compounds that contain carbon with the exception of \_\_\_\_\_, \_\_\_\_\_, and ionic compounds of the carbon containing polyatomic ions \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
- List 3 items in this room that are organic (not including foods from this lab) & 3 items that are inorganic.  
Organic: \_\_\_\_\_  
Inorganic: \_\_\_\_\_
- Define “hydrocarbons”. \_\_\_\_\_  
\_\_\_\_\_
- Because C-C bonds and C-H bonds have a low  $\Delta EN$ , 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  $CO_2$  from the air and incorporate it into complex organic molecules.
- What does “refining” mean? \_\_\_\_\_  
\_\_\_\_\_
- \_\_\_\_\_ is obtained by drilling. It consists of organic molecules with 1 to 40 carbon atoms.
- Natural gas consists of organic molecules with \_\_\_\_\_ carbon atoms.
- 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.
- The different components that make up crude oil are separated based on their different \_\_\_\_\_ in a process called \_\_\_\_\_ or \_\_\_\_\_.
- Which part of a fractionating tower is the coolest? \_\_\_\_\_ The warmest? \_\_\_\_\_
- Which part of a fractionating tower holds the smallest molecules? \_\_\_\_\_
- Generally, what use do most of the petroleum fractions (in fig.1) serve? \_\_\_\_\_