The Chemistry of Aromas



S.C.O.P.E. PROGRAM



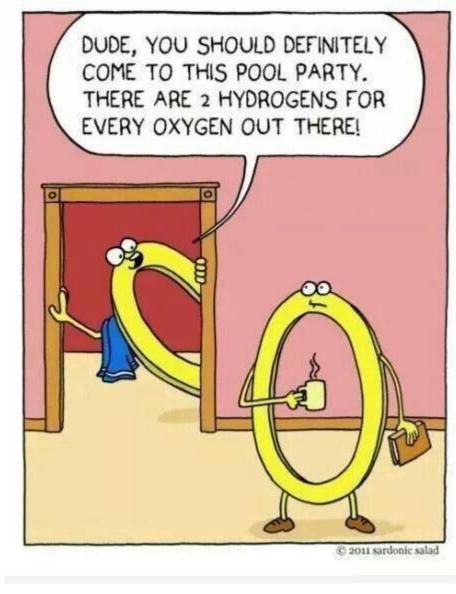
A molecule is the **smallest unit of a substance** that has all the properties of that substance. For instance, a water molecule is the smallest unit that is still water.

A water molecule can be divided into tiny parts called <u>atoms</u>.

This produces two hydrogen atoms and one oxygen atom.

Some molecules make up the **<u>chemical elements</u>**.

The chemical elements are the substances of which all <u>matter</u> is made.
That is, everything in the world is either a pure element or a combination of two or more elements. The molecules of pure elements contain only one type of atom. For example, the molecules of the element iron consist only of iron atoms.



© 2006 Encyclopædia Britannica, Inc.

A water molecule contains two atoms of hydrogen (H) and one atom of oxygen (O). Scientists have... Encyclopædia Britannica, Inc.

: O : H or

University of Toledo 6/28/2022

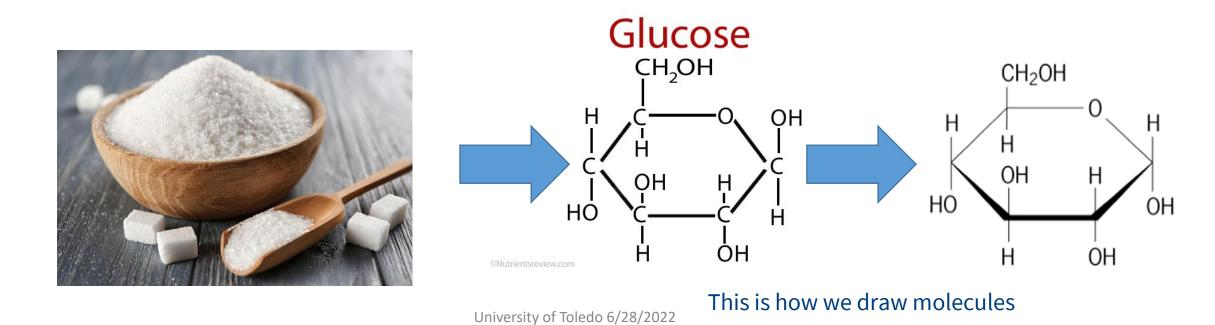


Other molecules contain atoms of two or more different elements. **A substance made of such molecules is called a** <u>chemical</u> compound.

Water is a chemical compound because its molecules have two hydrogen atoms and one oxygen atom.

The sugar called glucose is another chemical compound. Each glucose molecule contains 6 carbon atoms, 12 hydrogen atoms, and 6 oxygen atoms.

Some very complex molecules in living cells are made up of hundreds of thousands of atoms....

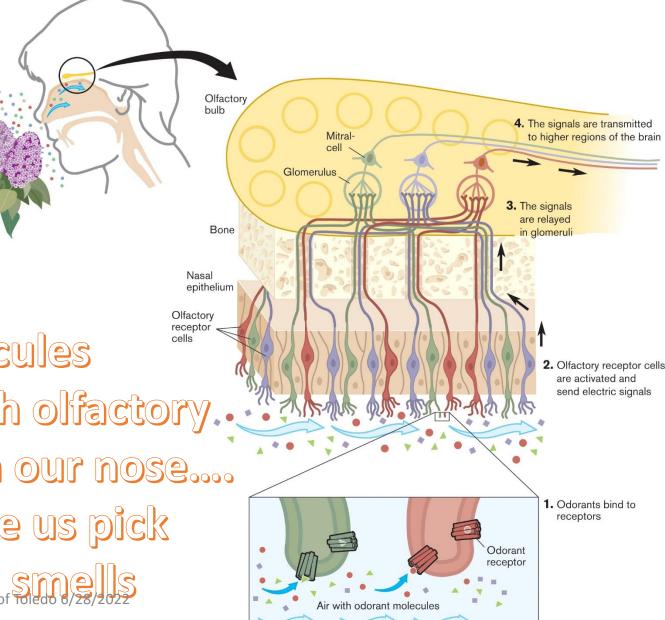




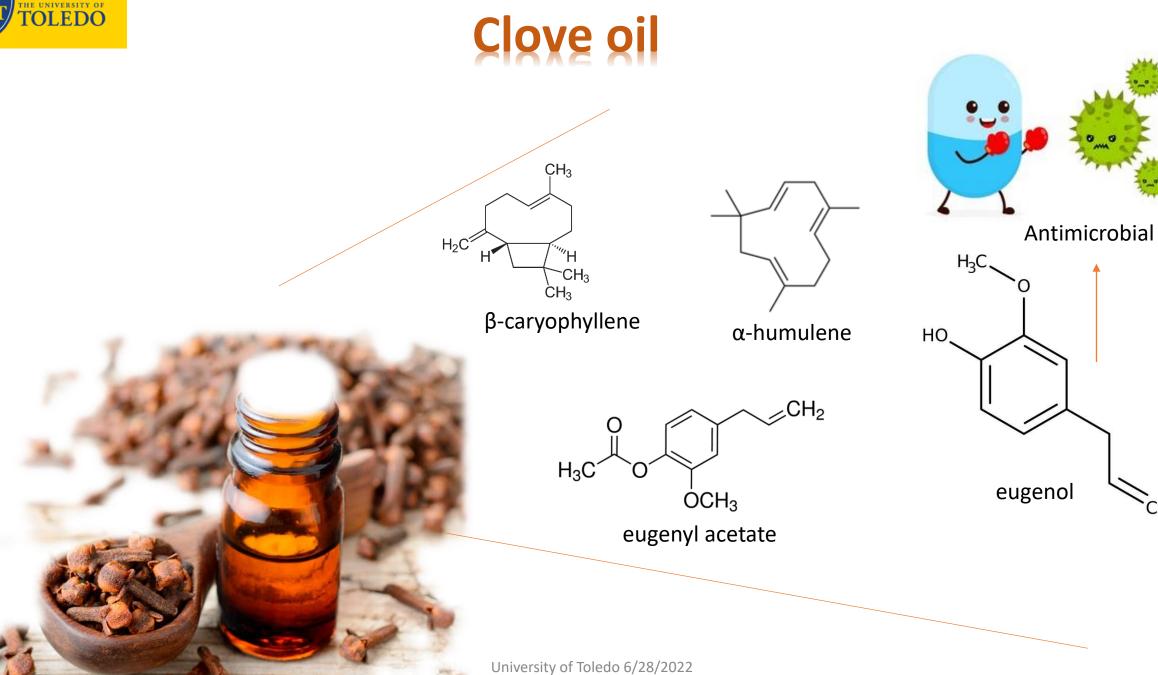
An odor is caused by one or more volatilized chemical compounds that are generally found in low concentrations that humans and animals can perceive by their sense of smell



Some molecules interact with olfactory receptors in our nose....and make us pick aromas and smells



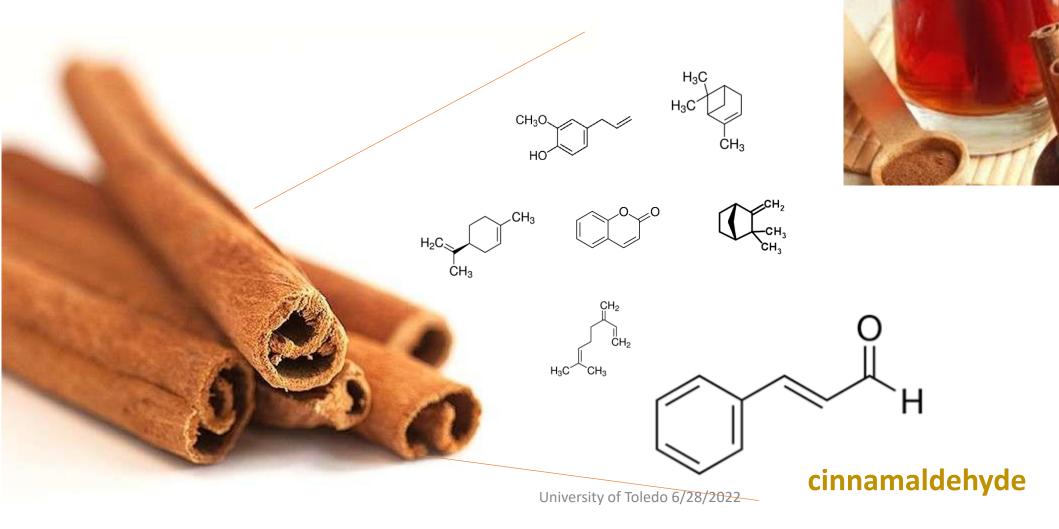




CH₂



Cinnamon sticks



Why is it important to study aromas???





MOOD SCENT

Western Oregon University Digital Commons@WOU

Honors Senior Theses/Projects

Student Scholarship

5-1-2015

The Effects of Peppermint and Orange Aromas on Mood and Task Performance: A Research Study and Process Narration



SCENT MARKETING RESEARCH



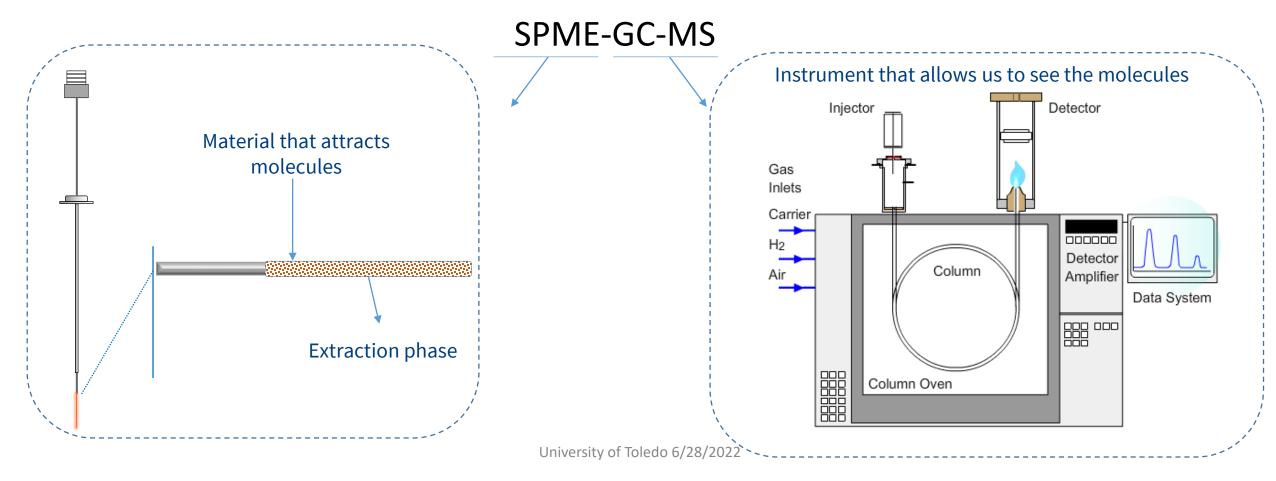


TOLEDO



Today's experiment

• Analyze the aroma of pine needles and cinnamon sticks by





Step 1: Extraction



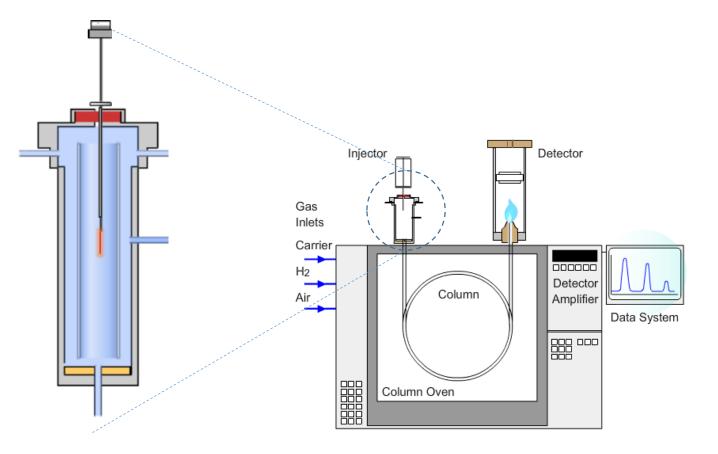
Extraction Procedure

Solid Phase Microextraction for GC is typically used to analyse volatile components in complicated matrices – VOC's from water samples and flavours / odours from food and beverages are typical examples.

Performance Comparison

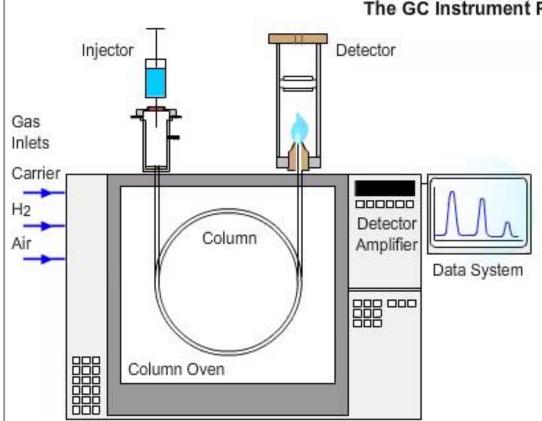


Step 2: Desorption





Step 3: Analysis



The GC Instrument Process

The sample is injected into the inlet where it is volatilized and a representative portion is carried onto the column by the carrier gas.

The sample components are separated by differential partitioning in the stationary and mobile phases.

The separated sample components elute from the column into the detector where some physicochemical parameter is detected and a signal produced.

This signal is then amplified and sent to the data system where the chromatogram is electronically constructed.





S.C.O.P.E. PROGRAM



University of Toledo 6/28/2022