	Grade / Age: 16-18 **Topic: Stereochemistry and VSEPR** **Subject area: Organic Chemistry** **Keywords: modelling, 3-D** **Single/ team work: team** **Language: English** **Duration: 4x50 minute periods**

Description of the Task:

Project

Create a model of an organic compound as a 3D work of art.

Parameters

- Choose a molecule with at least 15-20 atoms in it, but less than 50
- Research its basic structure
- You will be using **Model Magic and toothpicks/bamboo skewers** to put your model together. Colors should be:
  - Carbon – black
  - Hydrogen – white
  - Nitrogen – blue
  - Oxygen – red
  - Halogens – green
- Make sure to accurately represent:
  - Single-, double-, and triple-bonds.
  - VSEPR structure of the molecule
  - Size of each atom with regards to the other atoms in the molecule
- For one of your elements, you will want to add an **artistic element**. In other words, think creatively about how to design that particular atom. Sure, you could make it just another sphere, but wouldn't that be boring? (*HINT: "If I made a caffeine model, I could make the Nitrogen atoms look like _____ (something with caffeine in it)!" "If I made a _____ model, I could make the Oxygen look like disembodied brains!"*)

Research

To investigate the uses and structure of your molecule, I recommend the following website:

http://www.nyu.edu/pages/mathmol/library/

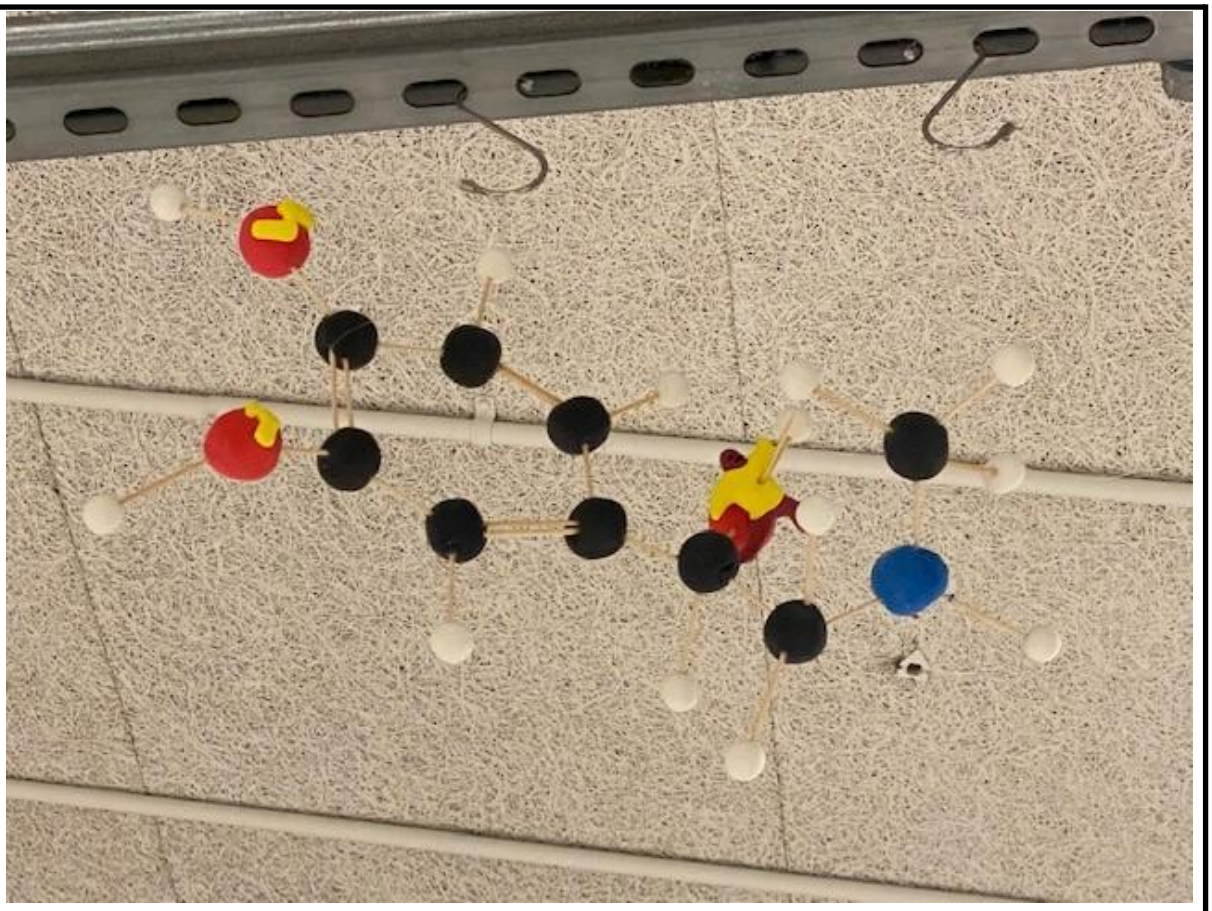
http://www.worldofmolecules.com/

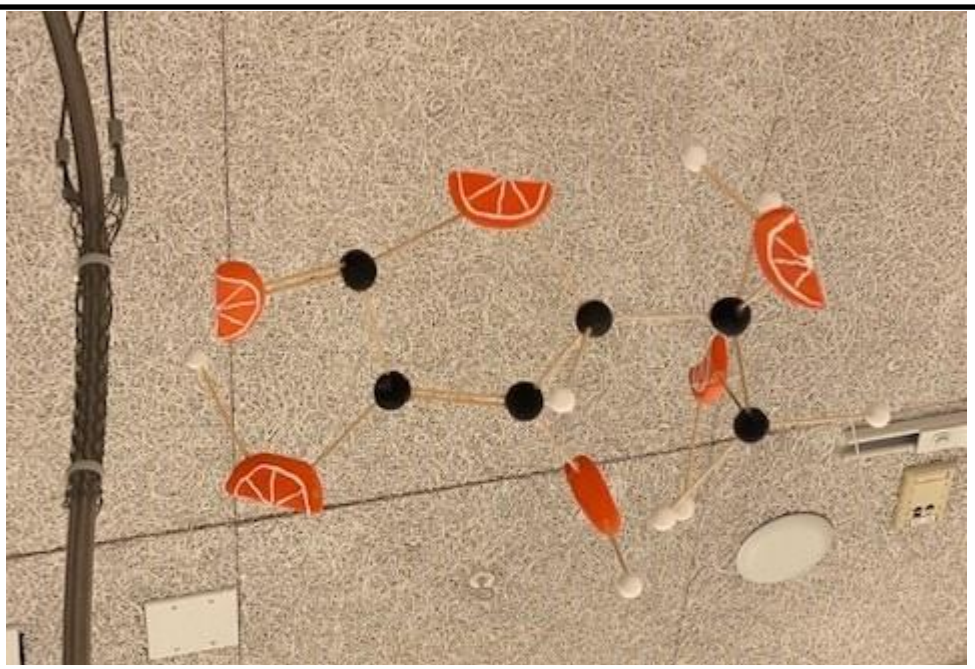
Presentation

Once you have completed your model and research, you will present it to the class. Your Powerpoint presentation must address the following:

- What is your molecule? Is it naturally-occurring or human-made?
- What is it used for? Where is it found?
- Why is this molecule important? Include at least one interesting fact or tidbit about your molecule or its history.
- What functional groups does your molecule have? (Alcohols, ketones, etc. You may have to research what these are!)
- What VSEPR shapes are present?
- Your molecule must have at least 1 stereocenter. Label it.
- Are the stereocenter(s) R- or S- designation?

Solutions of the Task:





Sample student presentation linked HERE.

Prior knowledge:

-VSEPR structure

-stereocenters

-R- and S- designations

Comments:

-This project is best done in pairs or groups. The best molecules are made with model magic clay and hot glue from hot glue guns.

-if supplies are limited, students can work in larger groups, or even make atomic spheres out of paper.

Connection to other subjects/topics/areas:

-art and sculpture, biology, modelling techniques