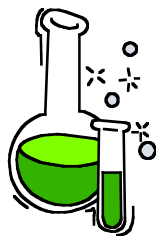


Pet Molecule Project



Description: With the goal of demonstrating that chemistry is relevant to most areas of life, each student will be assigned a “Pet Molecule” related to their field of interest. The project will apply skills and concepts learned in class to the student’s particular molecule. This project will have progressive due dates. The report will become more in depth with each due date. You may also revise any previous sections and turn them in with a later section. The whole project is to be kept in a folder. Write out each question in bold type just before each response. Some responses to the questions may apply more to your molecule than to another molecule. Therefore, you may have some responses that are much longer than others.

Research: Get a good start on your research. You need to have at least 2 reference sources (CRC Handbook, Merk Manual etc.), 3 other book sources (Molecules by P.W. Atkins), 2 current magazine/newspaper sources, and 3-5 web sources. You will probably have much more. Include these sources in a numbered list that is noted throughout the portfolio.

Part 1 Fact Finding: Due 2/4-20 points

1. What is the molecular formula of your molecule?
2. What are the different elements in your molecule and how many of each?
3. Is your pet molecule made up of metals, nonmetals or metalloids? What are the elements in each category?
4. Who would use this molecule? Why?
5. What are the chemical and physical properties? How are these useful?
6. Is this molecule usually (room Temperature) a liquid, solid or gas? Is it ever found in solution?
7. What are some of the different names of your molecule?
8. Give at least three different classes or groups that your molecule fits into. Explain each. For example is it classified as organic or inorganic?

Part 2 A Little Deeper: Due 3/4 -20 points

1. What are the useful and harmful characteristics of your molecule? Are there any products that contain your molecule? Which?
2. How is it produced either in nature or in a factory or both?
3. How is your molecule significant? What role has your molecule played in history? Who discovered it?
4. Is your molecule used to make other molecules? Which ones?
5. Draw 5 different pictures/models of your molecule? (Electron dot, structural, ball and stick, or space filling). Each diagram should be at least one page in size. Either the ball and stick or space filling model must be from 3 different angles.
6. Make a table showing each of the bonds between each element. Tell if the bond is ionic, polar covalent or nonpolar covalent.
7. What is the molecular formula and molecular weight and percent composition of your molecule? (Show all calculations)
8. Don't forget to revise and improve part 1

Part 3 Due Having Fun with my Pet Molecule 4/1 -20 points

1. How does your molecule react? What are some chemical reactions of your molecule? Why does it react in this way?
2. What is it about the structure of your molecule that gives it its properties?
3. Is your molecule polar or nonpolar? How did you determine the polarity?
4. What kind of intermolecular bonds does it form?
5. What role do the electrons play? How do the structure, shape, and elements of the molecule influence the electrons? How is this important to the function of the molecule?

Part 4 Now I'm an Expert: Due 4/22 -20 points

1. What are some molecules with similar properties? Why do they have similar properties?
2. What role do the elements play in determining the properties of the molecule?
3. What are the isomers of your molecule? Do they have similar properties?
4. What are the effects of your molecule on the body? (Good and bad)
5. What are the effects of your molecule or products of your molecule on the environment? (Good and bad)
6. Is your molecule ever part of a larger molecule such as a polymer? Which?
7. Draw a picture of the following organic groups or end groups (parts of organic molecules) benzenes, alcohols, esters, aldehydes, ketones, carboxylic acids, ethers, amines, and amides. Which ones are part of your molecule? How are the end groups that are in our molecule produced?
8. How do the organic end groups that are in your molecule react?
9. Don't forget to revise and improve parts 1 and 2.

Part 4 The Finish Line: Due 5/13 -20 points

Organize your work into a portfolio. Include all originals and revisions. Make sure everything is well labeled. You must include a bibliography of all of your sources. You need to have at least 2 reference sources (CRC Handbook, Merk Manual etc.), 3 other book sources (Molecules by P.W. Atkins), 2 current magazine sources, and 5 web sources. Include these sources in a numbered list that is noted throughout the portfolio. At the front of the portfolio you are to include these questions and your responses:

1. What did you like best about the project?
2. What was the most interesting thing you learned about your pet molecule?
3. What did your pet molecule teach you about Chemistry?
4. How did this project help you see the relevance of chemistry to your everyday life?
5. What is one thing you would like to know more about your pet molecule?
6. If you could do one experiment with your pet molecule, what would it be?