

Name _____ Period _____ Date _____



STEM Sims

Lesson 1: Having a Ball with Fullerenes

Fullerenes, commonly called buckyballs, are a class of organic substances that have highly unusual structures. These unique arrangements of atoms give rise to a number of chemical and physical properties unlike most other compounds. Can you find out what makes fullerenes so extraordinary?

Doing the Science

1. Start the Buckyball Simulation by clicking on the “Sim” tab.
2. Click on the Magnifying Glass next to the fullerene (C_{60}) container.
3. Draw the smallest repeating pattern of the C_{60} molecule in the space below. (Hint: The smallest repeating pattern is one pentagon and two hexagons with appropriate bonds)

4. Click the “Up” Arrow button to spin the molecule vertically. Note the number of pentagons and hexagons in the entire molecule. You can also click the “Sideways” Arrow button to view the opposite side of the molecule to be sure that you have counted all of the polygons.

Do You Understand?

1. How would you describe the overall shape of a C_{60} molecule?

2. What is the difference between parts of the molecule that have double lines between carbon atoms and the parts that have single lines between atoms?

3. How many carbon atoms make up the smallest repeating pattern that you drew in Step 3 above in the C_{60} molecule?

4. How many pentagons make up one C_{60} molecule?

5. How many hexagons make up one C_{60} molecule?