

### OBJECTIVE

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Students will engage in a variety of activities meant to help them better understand the molecular structure and bonds of common molecules.

### MATERIALS

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- Oculus Rift S or Oculus Quest
- Molecule Construction Guide
- "Roll the Die" printed on 8x5 index cards
- 8 dice
- Pencil/pen

### SYNOPSIS

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Nanome VR is a wonderful interactive VR application that allows the user to construct molecules. These molecules are 3D which can be rotated and examined. The app requires the correct formation and bond types be used. If not, it gives the user feedback and allows them to correct mistakes.

In this activity, students will be paired up. The student outside of the headset will verbally give a set of directions for creating a molecule. The student in the headset will follow each step until molecule is complete. Once the molecule is complete, they will answer questions about the structure and bonds.

### TIMELINE

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This activity is designed to take be completed in three-45 minute sessions.



### Days 1-2

- Before Day 1 –
  - Make copies of the following
    - Student Molecule Construction Guide
    - Roll the Die 8x5 index cards
  - Put students into pairs.
- Student pairs will alternate being in the headset. Their partner will read step by step direction to construct different molecules.
- After the completion of each molecule, there are a few questions at the bottom they need to answer.

### Day 3 – Roll the Die

- Hand out the “Roll the Die” index cards and have the students answer the questions on it.
- For this activity, divide the class into groups of 4 or 5 students. Give each group a single die.
- Students will each take 2 turns rolling the die. They will share with the group the answer that corresponds to the number they rolled. Encourage the groups to discuss the answers given by their classmates.
- Reorganize the class into different groups. Have them repeat the last step.
- Hold a class discussion on things they learned, enjoyed, or are still confused about.

## STANDARDS

### Chemistry –

- Compounds
  - Model the two basic types of compound formation at the atomic level
  - Interpret the information in a chemical formula
  - Use VSEPR theory to determine the molecular geometry and/or bond angles for a species

