Activity: The Molecule Dance

FOR THE TEACHER

Summary
In this activity, students will explain bond and molecular movements by mimicking molecular motion with their own movements.

Grade Level
High School

NGSS Alignment
This activity will help prepare your students to meet the following scientific and engineering practices:

- **Scientific and Engineering Practices:**
  - Developing and Using Models

Objectives
By the end of this lesson, students should be able to:

- Identify the types of movements that occur within the molecule and the movements of the whole molecule.

Chemistry Topics
This lesson supports students’ understanding of:

- Covalent bonding
- Molecular motion

Time
**Teacher Preparation:** minimal
**Lesson:** 10 minutes

Materials
- Music (optional)

Safety
- Students will come into contact with each other during this activity.

Teacher Notes
- Music adds to the excitement, but you need to have something that has a pretty fast beat or some mean guitar going on.
- When everyone is up and moving around at the end of the activity, the collisions should be gentle and elastic. Be careful that students don’t get too enthusiastic with their collisions!

FOR THE STUDENT

Lesson

**Molecule Dance**

As you learn this dance, you will demonstrate the various bond and molecular movements that are constantly happening in molecules. You will start by doing the “moves” one by one. Then, you will put all the movements together at once, just as a molecule does. Think of yourselves as water molecules: your bodies are the oxygen atoms, your arms/fists are the hydrogen atoms.
Bond Movements

1. **Stretching** (symmetric or asymmetric) – Stretch out your arms and contract them in, sometimes symmetrically and sometimes asymmetrically, showing how bonds stretch and contract.

2. **Bending** – Bend your arms up and down, side to side, diagonally, showing how bonds bend around.

3. **Rotating** – Twist your arms around, showing the rotation of a bond.

Molecular Movements

1. **Vibration** – The molecule vibrates because of the combination of all the bond movements going on within the molecule (above), so do all of the bond movements together, shaking your bodies to simulate this.

2. **Rotation** – Molecules rotate, so spin around to show rotation. To avoid injury, please avoid doing somersaults and cartwheels, but in reality the molecule would rotate all different ways.

3. **Translation** – Molecules move around, so move from one place to another in a straight line until there is a collision. When everyone is up and moving around, be careful! The collisions should be gentle and elastic!!

Put all of these moves together, and you have the Molecular Dance!