Intermolecular Forces and Molecules Model Lab Project

Pre-Lab Questions and Terms:

1. Define the four types of intermolecular forces:
    a. Dipole interactions:

    b. Dispersion forces:

    c. Hydrogen bonds:

    d. Ion dipole:

2. How do the four types of intermolecular forces work?

3. What is the difference between a chemical bond and an intermolecular force?

4. What is the strongest intermolecular force?

5. Describe how intermolecular forces determine if a substance is a solid, liquid or gas?

Materials:

1. Computer
2. Molymod kit OR Gumdrops OR Playdough OR Styrofoam balls
3. Toothpicks OR Pipe Cleaners

Procedure:

1. Go to: Intermolecular Forces Simulation
2. Click on the "select a pair of molecules" from the dropdown menu. You will complete the steps below for each set.
3. In the data table below state your prediction on how it will be to pull apart the molecules.
4. To pull apart the molecules, click on the green star.

Data Table 1:

Molecule	Prediction	Prediction correct? Describe.	Polar/nonpolar	Intermolecular Force
Br_2-Br_2				
H_2-H_2				
HBr-HBr				
HBr_2-HBr_2				

5. For each molecule that you tested, create a model of them using a Molymod kit OR Gumdrops OR Playdough OR Styrofoam Balls and Toothpicks OR Pipe Cleaners.
    a. For each model label each part and intermolecular force that is present.
    b. If you are using a Molymod kit you may use rubber bands to connect the molecules.
    c. Take a picture of each model and insert the image into the table below.

Data Table 2:

Molecule	Model
Br_2-Br_2	
H_2-H_2	
HBr-HBr	

HBr_2-HBr_2	

Post-Lab Questions:

1. What is boiling point?

2. The intermolecular force present in water is? How does this type of IMF influence water's high boiling point and other physical properties?

3. Predict which molecules you tested in the simulation would have the highest and lowest boiling points?

4. Compare the actual boiling points of the molecules you tested in the simulation. Was your prediction correct?

5. Discuss how IMF's affect the boiling point of molecules.