



# Interactive Simulation

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Molecules and Light

### Did you know?

Some gases in our atmosphere allow light to transmit through them, while others tend to absorb light, transforming it into heat. Some of those gases absorb more types of light than others. Gases that absorb a lot of light, generating a lot of heat, are called greenhouse gases. These greenhouse gases warm the climate of our planet.

### Investigation Question

Which atmospheric gases absorb more than one type of light?

### Prediction

**Note:** In this simulation, particles of substances that absorb the light will begin to move, showing that they have gained energy. Some will then emit the light out in various directions, while others will change chemically. Particles of substances that allow the light energy to transmit through will not show any change in motion.

### Procedure

#### Part I: Microwave

1. Select microwave and turn the light all the way up.
2. Observe the reaction of the molecule of CO to this frequency of light.
3. Record “absorbed” or “transmitted” in the data table.
4. Select each molecule from the menu and observe the reaction of each to microwave radiation.
5. Record “absorbed” or “transmitted” for each substance in the microwave light column of the data table.

#### Part II: Infrared

6. Select infrared light.
7. Select each molecule from the menu and observe the reaction of each to infrared radiation.
8. Record “absorbed” or “transmitted” for each substance in the infrared light column of the data table.



# Interactive Simulation

## Part II: Visible

9. Select visible light.
10. Select each molecule from the menu and observe the reaction of each to visible radiation.
11. Record “absorbed” or “transmitted” for each substance in the visible light column of the data table.

## Part IV: Ultraviolet

12. Select ultraviolet light.
13. Select each molecule from the menu and observe the reaction of each to ultraviolet radiation.
14. Record “absorbed” or “transmitted” for each substance in the ultraviolet light column of the data table.

## Data

Molecule	Part I	Part II	Part III	Part IV
	Reaction to Microwave	Reaction to Infrared	Reaction to Visible Light	Reaction to Ultraviolet
CO				
N <sub>2</sub>				
O <sub>2</sub>				
CO <sub>2</sub>				
H <sub>2</sub> O				
NO <sub>2</sub>				
O <sub>3</sub>				

## Conclusion

1. Which atmospheric gases absorb more than one type of light?