

# CHEMISTRY LAB

## Intermolecular Forces



# EVIDENCE OF INTERMOLECULAR FORCES: SURFACE TENSION

## ■ MATERIALS

Plastic tumbler

50 to 60 pennies

Water

Soap or Detergent Solution

Dropper

Wax Paper

## ■ PROCEDURE

1. Fill the tumbler to the very top with water, but do not allow it to overflow.

2. Hold a penny edge down just above the surface of the water. *Carefully* drop the penny into the center of the water.

3. Make observations and continue to carefully drop pennies into the tumbler.

4. When the water just begins to overflow, stop.

5. Count the number of pennies added.

6. Draw a picture of the tumbler just before it overflowed. Be as accurate as possible.

7. Draw a picture of what was happening on the submicroscopic level.

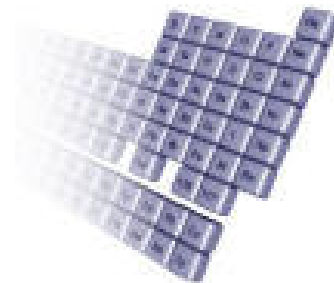
8. Repeat steps 1 through 6 using soap or detergent solution instead of water.

9. Place 2 to 3 drops of water on the waxed paper. Move them toward each other with the dropper. Describe what happens.

10. Compare the two pictures of the tumbler just before it overflowed.

11. Compare the number of pennies needed in the water and the soap solution. Summarize your conclusions.

12. Surface tension can prevent water from being a



**READ  
ALL  
INSTRUCTIONS  
BEFORE  
PROCEEDING**

12. Surface tension can prevent water from being a good wetting agent. When water beads up on surfaces rather than wetting them, it cannot be an effective cleaner. Explain, on the basis of this experiment, how the addition of soap or detergent to water can greatly increase the ability of water to remove dirt and grease.
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■ **SAFETY NOTE**

You may not perform unauthorized experiments such as spraying your lab partners with water or soap. Such unauthorized experiments **will result in a zero** for this laboratory grade and the great displeasure of your instructor.