

How Temperature Affects The Solubility of a Gas

Name _____ Date _____ Period ___ Group ___

Problem: Does a gas that is dissolved in water become more soluble, or less soluble as you increase the temperature of the solution?

Hypothesis: _____

Variables: By the time you finish this experiment ,you will need to identify the different types of variables present in this investigation. Consult your notes for definitions of the types of variables.

Independent Variables: _____

Dependent Variables: _____

Controlled Variables: _____

Procedures:

1-Heat about 10 ml of a concentrated ammonia solution in a test tube as shown in the diagram below. Some phenolphthalein indicator has been added to the ammonia solution and to the cold water in the beaker. The pink color indicates a basic solution, which is caused by the presence of the ammonia gas in the water. Use 1 or 2 boiling chips. Keep the beaker at least a foot away from the large test tube until step 5.

2-Make sure that the upside down test tube is completely dry.

3-Heat the solution so that it **boils** for about one minute. Remember to blow out the burner when done heating.

4-**Replace** the two hole stopper and tubing, with a one-holed rubber stopper in the large test tube, while it is still upside down and **cover** the hole of the stopper with your index finger.

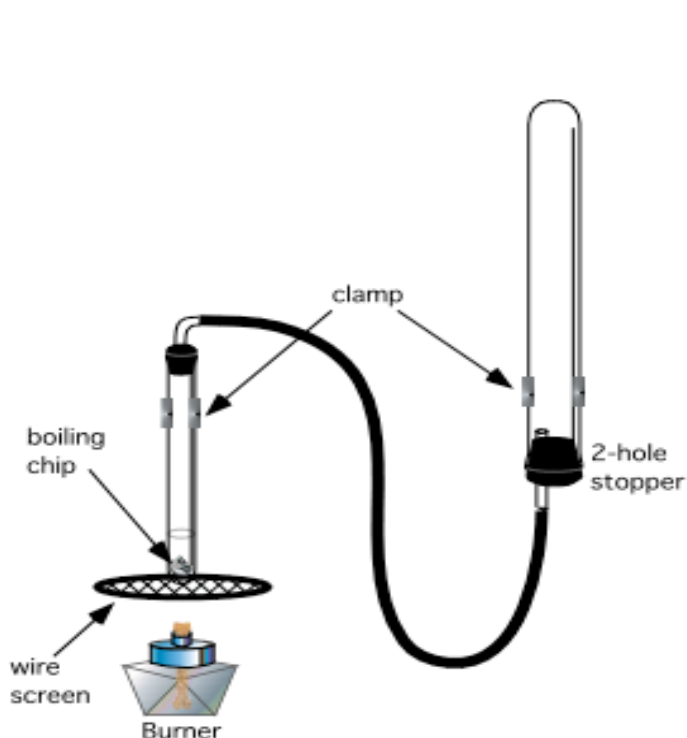
5-Slide the large test tube gently downward within the clamp, keeping the test tube vertical as you do so, until the end of the test tube is about halfway below the water's surface.

6-Remove your finger from over the hole of the stopper and keep the end of the test tube below the water's surface.

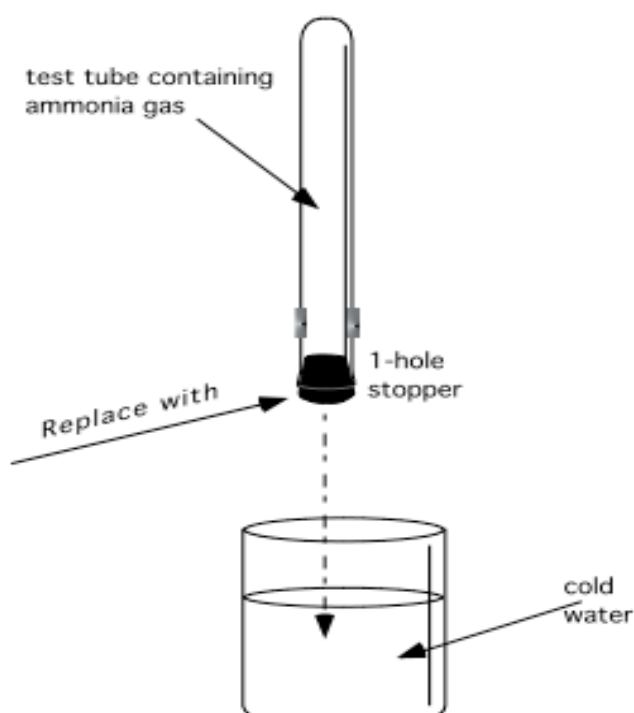
Materials: See diagrams. Safety goggles

Safety: Do **not** wear contact lenses. Wear safety goggles while using the ammonia solution. Do not inhale gas.

During Heating



After Heating



Observations

Your

Results:

Class Results:(Include the different types of student answers)

1. Since you *collected the gas in an inverted (upside down) test tube*, what does that suggest about the **density** of the **gas**, as **compared** to the **density** of normal air ?

2. What happened to the color of the ammonia solution as it was being heated? What does this tell you is happening to the solubility of the ammonia gas in the solution , as it gets hot?

3. What happened to the color of the cold water from the beaker when it went into the large test tube that was lowered into it ? What does this suggest happens to the solubility of a gas as it gets cold ?

Overall Conclusion : 1-State if your original hypothesis was correct or incorrect. This should be based on the best information collected from the experiment. 2- If it was incorrect, give the correct answer, again based on the best information collected from the experiment. 3-Include a brief summary of the data collected during the experiment telling how it supports your answer for the hypothesis.

Sources of Error Identify *two* things that people may have done incorrectly that would have caused them to get totally different answers from the rest of the class. These errors must be unique,in other words they have not been applicable in previous labs.They must be *new* sources of error.Be *specific* about what might have been done.
