Experiment 5.6 Paper Chromatography

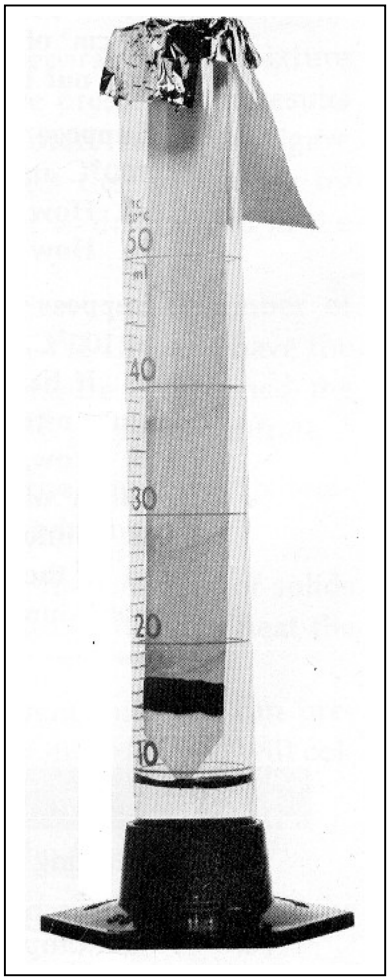
Try filtering some black ink.

- Is there any evidence that ink is a mixture?

So far you have learned how differences in density, boiling point, and solubility can be used to separate substances. In this experiment you will investigate a method that works even when the substances in the mixture are present in only minute quantities.

Hang a strip of chromatography paper streaked with ink in a graduated cylinder containing water as shown in Figure 5.10. When the color has risen up the paper about ½ the way to the top, remove the paper and place it in the laboratory oven to dry.

As you are waiting for the chromatograph to separate, set up a distillation apparatus like in experiment 5.1 and distill about 5 cm^3 of ink almost to dryness. Be sure to add a boiling chip to the test tube.



- Is the ink made up of more than one substance?
- Is the color of the ink part of the solvent or the solute or both?

After completing the distillation, re-examine the chromatography paper.

- How many different substances can you identify?
- Can you put the substances back together again to make black ink?

Cut out each of the colored sections, and put each one in a separate test tube. Add between 10 and 20 drops of water to each tube.

- Do the colored substances dissolve?

Pour the liquids from all three test tubes into a single test tube. Add a boiling chip and gently heat the test tube over a Bunsen burner to evaporate at least ½ of the water.

- What color is produced?