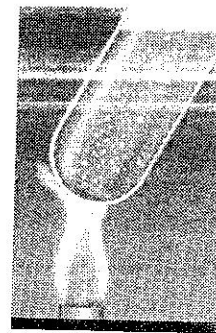


Coffee Filter Chromatography

Paper chromatography is a method of separating substances based upon their different attractions for the paper. The paper is called the stationary phase of the system, and the solvent is called the moving phase. In this experiment, the moving phase is water, a polar molecule. You will examine the composition of washable color marker inks by comparing the distances each component in the inks travels on a filter-paper chromatogram.

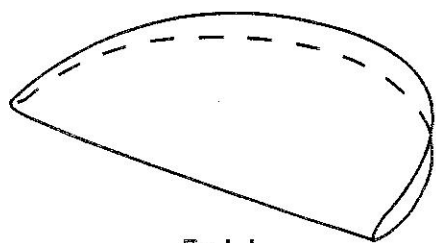


CHEMLAB AND
MINILAB WORKSHEETS

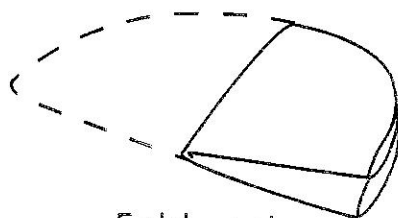
MINILAB 9.1

PROCEDURE

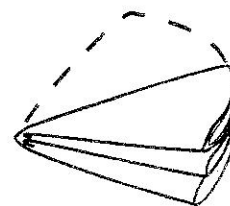
1. Obtain a set of markers and two circular coffee filters.
2. Cover the bottom of a plastic cup with a small amount of water.
3. Lay the two coffee filters together on a dry surface. With the filters still together, fold the circles into eighths as shown.
4. Unfold the filters, but do not separate them. Find the center spot where all folds converge.
5. About 5 cm from the center, along a crease, make a dark mark with one of the pens. The mark should appear on both filters.
6. Continue for all eight creases, using a different color marker on each crease.
7. Separate the filters. Keep one filter unfolded as a control. Refold the other filter.
8. With a small amount of water in the bottom of the cup, gently place the folded coffee filter, tip down, into the water.
9. When water reaches the top of the paper, gently remove the paper.
10. Gently open the paper. Compare each mark on the control filter with the corresponding mark on the chromatographed filter.



Fold



Fold again



Fold again

14. Carefully remove the filter paper, open it flat, and mark the solvent edge (the farthest point the water traveled) gently with a pencil. Lay the filter paper on a paper towel to dry.

15. For each piece of candy spotted, measure the distance from the original pencil line to the center of each separated spot. Record these data in your data table. Some candies may have more than one spot.
16. Measure and record the distance from the original pencil line to the marked solvent edge.
17. Record the distance from the original pencil line to the center of each spot separated from the reference spot of Yellow #5.

ANALYZING AND CONCLUDING

1. Interpreting Observations Do any of the candies contain Yellow #5? How can you tell?

DATA AND OBSERVATIONS

Solvent distance: _____ (distance from first pencil mark to solvent edge)

Original Spot	Distance (color 1)	Distance (color 2)	Distance (color 3)
Yellow #5 Reference			
marker Candy 1			
marker Candy 2			
marker Candy 3			
marker Candy 4			
marker Candy 5			
marker Candy 6			