Paper Chromatography Simulation Lab

Pre-Lab Questions



A student placed a piece of chromatography paper in a polar solvent like a 20% Sodium Chloride solution as shown above. An unknown mixture was placed at the starting line down near the bottom of the chromatography paper. The unknown mixture separated into two different distinct spots, labeled Model A and Model B, over a 5-minute time span.

- 1. How far did Model A travel with the polar solvent in the 5 minutes?
- 2. How far did Model B travel with the polar solvent in the 5 minutes?

3. How far total did the solvent front travel in the 5 minutes?

- 4. What percentage of the way did Model A travel (in decimal form, round to 2 significant digits)?
- 5. What percentage of the way did Model B travel (in decimal form, round to 2 significant digits)?
- 6. If polar substances can make stronger intermolecular attractions with other polar substances, which Model is the most polar? Model A or Model B (circle your answer)
- If a few more minutes go by and the solvent front travels a total of 11.2 cm in length, how far will Model A have traveled? _____
- If the solvent was changed to a non-polar solvent, which substance would have traveled further up? Model A or Model B

Laboratory Simulation

- 1. Google "chemsite paper chromatography" go to http://chemsite.lsrhs.net/FlashMedia/html/paperChrom.html
- 2. Perform the Experiments listed in the table below. Adjust each of the properties, press Start Experiment, record the approximate percentage that each dye traveled with respect to the solvent front, and assuming a polar solvent, indicate which solvent is most polar.

Trial	Adjust Blue Dye Properties Adsorp. to Adsorp. to		Adjust Yellow Dye Properties Adsorp. to Adsorp. to		% the	% the	Most
	the Paper	the Paper	the Paper	the Paper	Blue Dye Traveled (in decimal form)	Yellow Dye Traveled (in decimal form)	Polar Dye
1	Low	High	High	Low			
2	High	Low	Low	High			
3	25% Low	75% High	75% High	25% Low			
4	75% High	25% Low	25% Low	75% High			



Chromatography Chambers

Developed Chromatograms

A student placed Dye A, Dye B, and Dye C spots on chromatography paper. The paper was placed in a polar solvent as shown above. After a few minutes, the dyes began to separate shown in the developed chromatogram above. The student also tested an unknown solution.

- 1. What is the approximate Rf value or percentage that Dye A has traveled with respect to the solvent front? (put your answer in an approximate percentage in decimal form) _____
- 2. What is the approximate Rf value or percentage that Dye B has traveled with respect to the solvent front? (put your answer in an approximate percentage in decimal form) _____
- 3. What is the approximate Rf value or percentage that Dye C has traveled with respect to the solvent front? (put your answer in an approximate percentage in decimal form) _____
- 4. What is the approximate Rf value or percentage that unknown solution has traveled with respect to the solvent front? (put your answer in an approximate percentage in decimal form) _____
- 5. What is the unknown solution Dye A, Dye B, or Dye C (circle your answer)
- Which of the three dyes would most likely have hydrogen bonding attractions? Dye A, Dye B, or Dye C (circle your answer)
- Which of the three dyes would most likely have dipole-to-dipole attractions? Dye A, Dye B, or Dye C (circle your answer)
- Which of the three dyes would most likely have London Dispersion Forces of attractions? Dye A, Dye B, or Dye C (circle your answer)