ANALYSIS OF UNKNOWN MIXTURE BY THIN LAYER CHROMATOGRAPHY (TLC)

Read pages 819-831 (*Thin-Layer Chromatography -TECHNIQUE 20*) in Introduction to Organic Laboratory Techniques; A Small Scale Approach. (Pavia, Lampman Kriz, and Engel) before conducting the experiment.

The following five stock solvent systems will be available to you in the laboratory:

1. 100% hexane
2. 25% dichloromethane: 75% hexane
3. 50% dichloromethane: 50% hexane
4. 100% dichloromethane
5. 50% ethyl acetate: 50% dichloromethane

(Note; The solvents above are listed approximated in increasing order of polarity.)

1. Obtain from your instructor a small amount of a dichloromethane solution containing two *UNKNOWN* compounds.
2. Label six clean test tubes 1-6, and obtain 0.5 mL of each of the standard samples listed below.
3. Use a TLC capillary to spot the TLC plate with the six standards and the unknown. Examine the TLC plate under the UV lamp to determine if the plate has been properly spotted (*Figure 1*).
4. Elute the TLC plate in 100% hexane.
5. Visualize the TLC plate under the UV lamp, and circle all of the spots with a pencil.

*Figure 1* A hypothetical TLC plate that has been spotted with the six standards and the Unknown Mixture before and after elution.

Repeat the process with the same six standards, and the unknown, on a second TLC plate with the next solvent system listed above. Continue until you have run your TLC in each of the solvent systems listed above.

The Unknown Mixture should contain two of the six standard compounds which are:

1. Acetanilide
2. Cinnamic acid
3. *p*-Nitrobenzyl alcohol
4. Benzophenone
5. Fluorenone
6. trans-Stilbene

Tape the TLC plates in your notebook for examination by the laboratory instructor. Indicate the identity of the two components of your unknown mixture.
Note to instructor, at the beginning of the lab period, demonstrate the following:

1. How to pull a TLC capillary.
2. How to spot a TLC plate.
3. How to elute a TLC plate.
4. How to visualize a TLC plate.