Thin Layer Chromatography

Please read Unit 8 for general principle and overview of Thin Layer Chromatography

Procedures for TLC experiment:

Preparation of the developing chamber. Unless your instructor indicates otherwise, use ethyl acetate with 0.5% acetic acid as the developing solvent. Fill an appropriate developing chamber containing a paper wick to a depth of about 5 mm with the solvent, cover it, and set it aside while you prepare the TLC plate.

1. Each pair of students should obtain an unknown, four micropipets, and four Thin Layer Chromatography (TLC) plates.

2. Measure the R_f of standards (phenacetin, aspirin, and caffeine) by TLC.

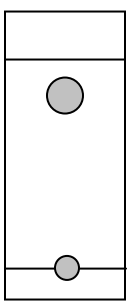
3. Measure the R_f of the unknown. By comparison, identify the compound(s) in the unknown.

4. Write up the lab experiment in your lab notebook. Include the unknown number and identification of your compound. The notebook write up should contain drawings of the TLC plates in the data section and all R_f calculations. Make sure to follow the notebook guidelines and to answer the questions below.

Questions

1. How would the results of the TLC experiment be different if we used 98% ethyl acetate and 2% acetic acid instead of the mobile phase actually used? Would the R_f values for phenacetin, aspirin, and caffeine be different?

2. What is the R_f for the compound on the TLC plate illustrated to the right? Show all of your work.



3 . The R_f value of compound A is 0.34 when developed in hexane and 0.47 when developed in dichloromethane. Compound B has an R_f of 0.42 in hexane and 0.69 in dichloromethane. Which solvent would be better for separating a mixture of compounds A and B? Why?

For Mr. Bryan Mclean, Please prepare the following material.

1. Phenacetin, aspirin, and caffeine should be provided both as standard compounds for TLC and as unknowns.
2. TLC plates.
3. Short wave UV lamps.
4. Ethyl acetate and glacial acetic acid.