Who Has My White Solid?

Name: _____

Technique____/5 Report____/50 Total _____/55 Student ID:_____

I) (13 pts) Physical Properties: Sample # _____

Solubility: Water:_____ Aqueous NaOH:_____

Melting Point (MP): _____

Thin Layer Chromatography results:

TLC Plate 1

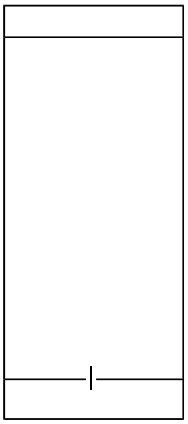


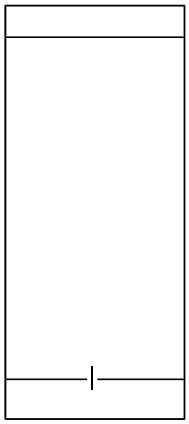
Plate 1:

R_f:_____
Visualization method:

Plate 2:

R_f:_____
Visualization method:

TLC Plate 2



Solvent system:

Solvent system II:

II) (5pts) Comparison

List the people who have the same compound:

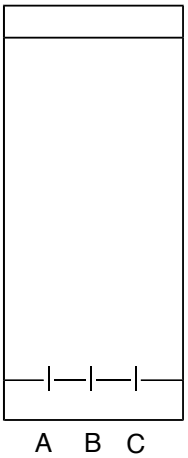
Person:	Their MP:	Mixed MP:	Solubility (yes/no) H_2O	Aq. NaOH

(5 pts) For each person, draw an accurate representation of each TLC (like in section I) containing your compound, their compound, and a co-spot. Be sure to list the R_f and solvent system used. Also be sure to label the lanes that contain each spot:

III) (7 pts) Compound Identification

Draw a structure for the molecule you think your group has:

Standard MP: _____ Mixed MP:_____



Solvent system:_____

Identify the lanes:
A:
B:
C:

R_f:_____

Visualization method:_____

IV) (25 pts) Discussion

On a separate page, briefly answer the following questions.

1) (5 pts) Briefly, explain how you identified those with the same compound and how you identified your compound.

2) (5 pts) Discuss the important intermolecular forces that exist between your compound and the TLC plate, and between your compound and the developing solvent (i.e. how the TLC works).

3) (5 pts) Explain the difference in R_f value between the two solvent systems used to obtain the thin layer chromatograms.

4) (4 pts) Explain why a compound that is insoluble in water can be soluble in aqueous NaOH.

5) (3 pts) A student determines the melting point of the same compound twice. In one determination, the tube contained a sample 1 - 2 mm in height, and the melting point was 141 - 142 ˚C. In the second determination, the sample hight was 4 - 5 mm and the melting range was 141 - 145 ˚C. Explain what may have caused the broader range observed in the second determination. (The actual melting point is reported to be 143 ˚C.)

6) (3 pts) Another student, determining the melting point of the same compound in question 5, recorded a range of 136 - 138 ˚C. The rate of heating was recorded as 12 ˚C / minute. Further analysis showed that the sample was pure. Why is the melting point so low?