Chem 220 Organic Chemistry I Fall 2024 - Ilana Berlin/Assignments/Week 6: TLC and NMR 2/TLC Worksheet

Paul Gladen - Oct 03, 2024, 12:55 PM CDT

Assignment #7 - TLC Worksheet

You cannot edit this entry after it is graded.

Description	Due at 5:00 pm the day following your lab section.
I worked in a group with	
The work for this assignment is in	My notebook

Grade **10 / 10**

Graded on Oct 03, 2024, 12:55 PM CDT

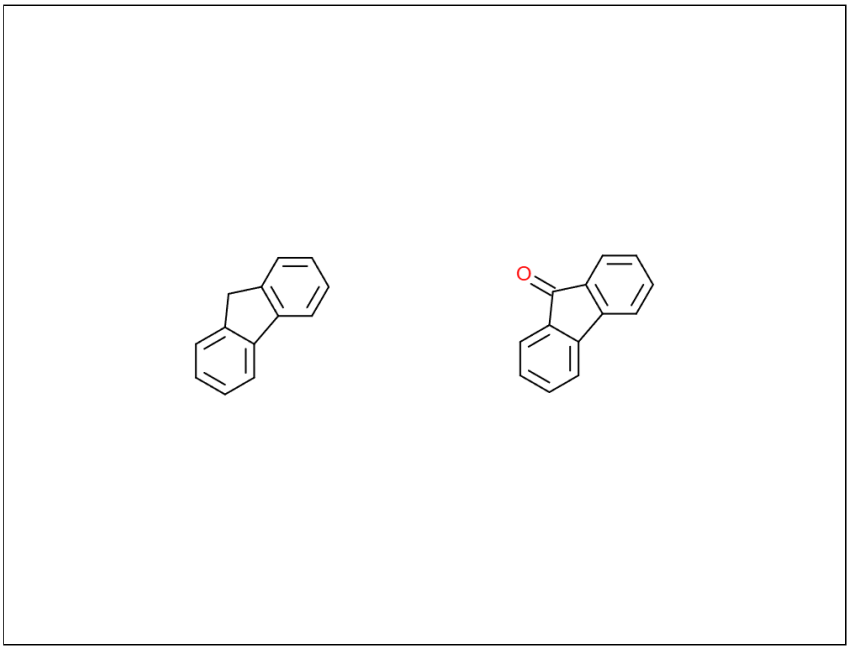
Erica Schultz - Jul 29, 2020, 9:20 AM CDT

ANALYSIS OF FLUORENE AND FLUORENONE USING TLC

1. **Draw structures for the fluorene and fluorenone in the chemical sketcher below.**

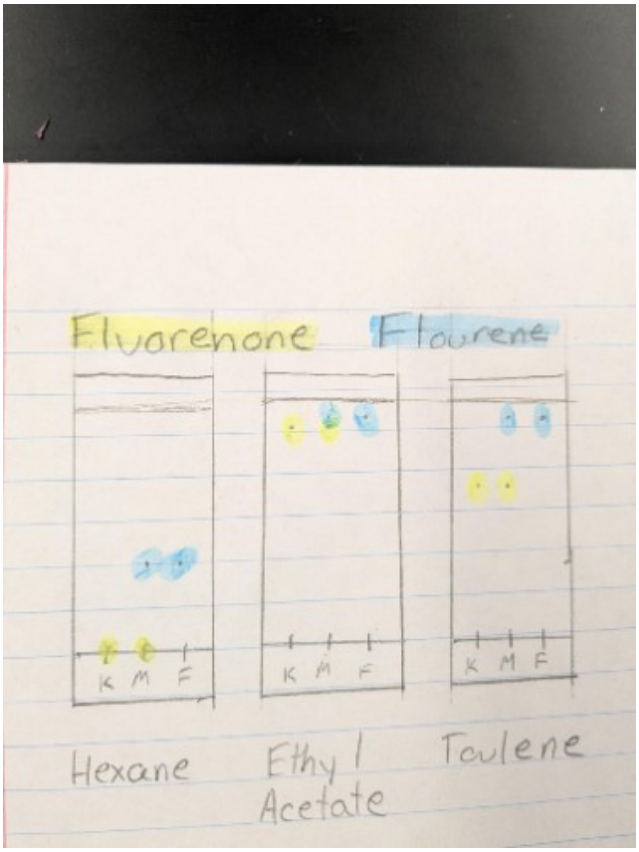
Ilana Berlin - Oct 01, 2024, 1:00 PM CDT

Chemical Sketch

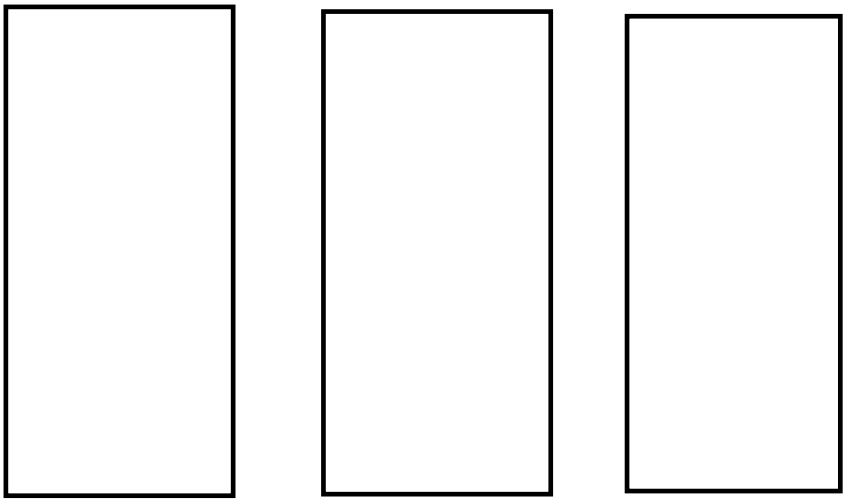


Ilana Berlin - Oct 01, 2024, 1:40 PM CDT

2. Draw a labeled sketch of each developed TLC plate in the sketch entry below.



Erica Schultz - Jul 29, 2020, 9:19 AM CDT



Ilana Berlin - Oct 01, 2024, 1:36 PM CDT

3. Do the following for each TLC plate. Using millimeter measurements, determine & record the following: the length of the solvent front, the distance traveled by each spot, and the R*f* values for the fluorene and fluorenone. Show data and calculations below.

Table of TLC Measurements and Rf Values

solvent	length of solvent front	distance traveled by K	Rf of K	distance traveled by F	Rf of F
ethyl acetate	5.2cm	4.5cm	0.90	4.6cm	0.88
toluene	5cm	2.2cm	0.44	4.7cm	0.94
hexane	5cm	0.1cm	0.02	1.7cm	0.34

Rf = distance travelled/length of front

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4. Which solvent gave the best results? Explain your choice.

Toulene gave the best results. The distances were not all between 0.2 and 0.8 R_f but they were the best out of all the solvents. The sample solvents were not at the top of the solvent front, like they did in the ethyl acetate, and they did not stay stationary, like the fluorenone did in the hexane.

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5. Describe the types of intermolecular forces involved between fluorene and 1) the silica gel and 2) the eluent solvents.

Fluorene is a nonpolar molecule so the only intermolecular forces it has is London Dispersion Forces.

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6. Describe the types of intermolecular forces involved between fluorenone and 1) the silica gel and 2) the eluent solvents.

Fluorenone is polar so it has dipole-dipole and LDF forces when interacting with polar silica jell and ethyl acetate. It only has LDF with nonpolar hexane and toluene.

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7. Using these interactions as a guide, explain the observed Rf values for fluorene and fluorenone.

Fluorenone generally had a lower R_f because it has dipole-dipole interactions with the silica gel that makes it harder to move. The hexane has minimal LDF because it is a small compound so it doesn't move the fluorenone and only moves the fluorene a little. The ethyl acetate is so polar and has enough LDFs that it pulls the fluorenone and the fluorene to the top of the solvent front. The toluene has enough LDFs that it manages pulls partially along the fluorenone but not all the way to the top like it does with the fluorene.