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Organic Chemistry I

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### Experiment 6: Thin layer chromatography

Thin-layer chromatography (TLC) is an extremely valuable analytical technique in the organic lab. It provides a rapid separation of compounds, and thereby gives an indication of the number and nature of the components of a mixture. TLC can also be used to identify compounds by comparison with known samples, to check the purity of a compound, or to monitor the progress of a reaction, an extraction, or a purification procedure. This experiment will introduce you to the mechanics of TLC, and the chemical principles behind it. Researchers may employ TLC as a tool to monitor the progress of a reaction, to purify small amounts of compounds, or even to select effective solvent systems for other chromatographic procedures. College students use TLC when using the scientific method. Because of its simplicity, cost effectiveness, and efficiency, TLC functions as one of the most widely used analytical analyses in the chemistry world.

The image shows a screenshot of the Microsoft Excel application. The ribbon at the top includes 'File', 'Home', 'Insert', 'Page Layout', 'Formulas', 'Data', and 'Review'. The 'Home' ribbon is active, showing options for 'Clipboard', 'Font', and 'Alignment'. The font is set to Calibri, size 11. The formula bar shows 'b extracte' with a cursor at the end. The spreadsheet has columns labeled A through G. Row 1 contains headers: 'Paper 1', 'Paper 2', and 'Avg'. Rows 2 through 5 contain data for items 'a', 'c', 'd', and 'extracte'. Row 6 is empty. The bottom of the screen shows the Windows taskbar with a search bar and system icons.

	A	B	C	D	E	F	G
1		Paper 1		Paper 2		Avg	
2	a	1.37037		0.733333		1.146296	
3	c	1.148148		1.333333			
4	extracte	0.851852		1.066667		0.978704	
5	d	1.296296		0.7			
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

PAPER 1 A = C Front = 2.7

Tablets A =  $\frac{3.7 \text{ cm}}{2.7 \text{ cm}} = 1.37037$

Tablets C =  $\frac{3.1 \text{ cm}}{2.7 \text{ cm}} = 1.148148$  Avg = 1.14629

R =  $\frac{2.3 \text{ cm}}{2.7 \text{ cm}} = 1.06667$

D =  $\frac{3.5}{2.7 \text{ cm}} = 0.7$

PAPER 2 Front = 3 cm

Tablets A =  $\frac{2.2}{3} = 0.7333$

B =  $\frac{3.2}{3} = 1.3333$  Avg = 0.9787

Tablets C =  $\frac{4}{3} = 1.06667$

D =  $\frac{2.5}{3} = 0.7$  Yield =  $\frac{0.978704}{1.146296} \cdot 100 = 85\%$

APA