HELLENIC REPUBLIC

UNIVERSITY OF CRETE

Academic English

Section: Separation techniques Handout (2015)

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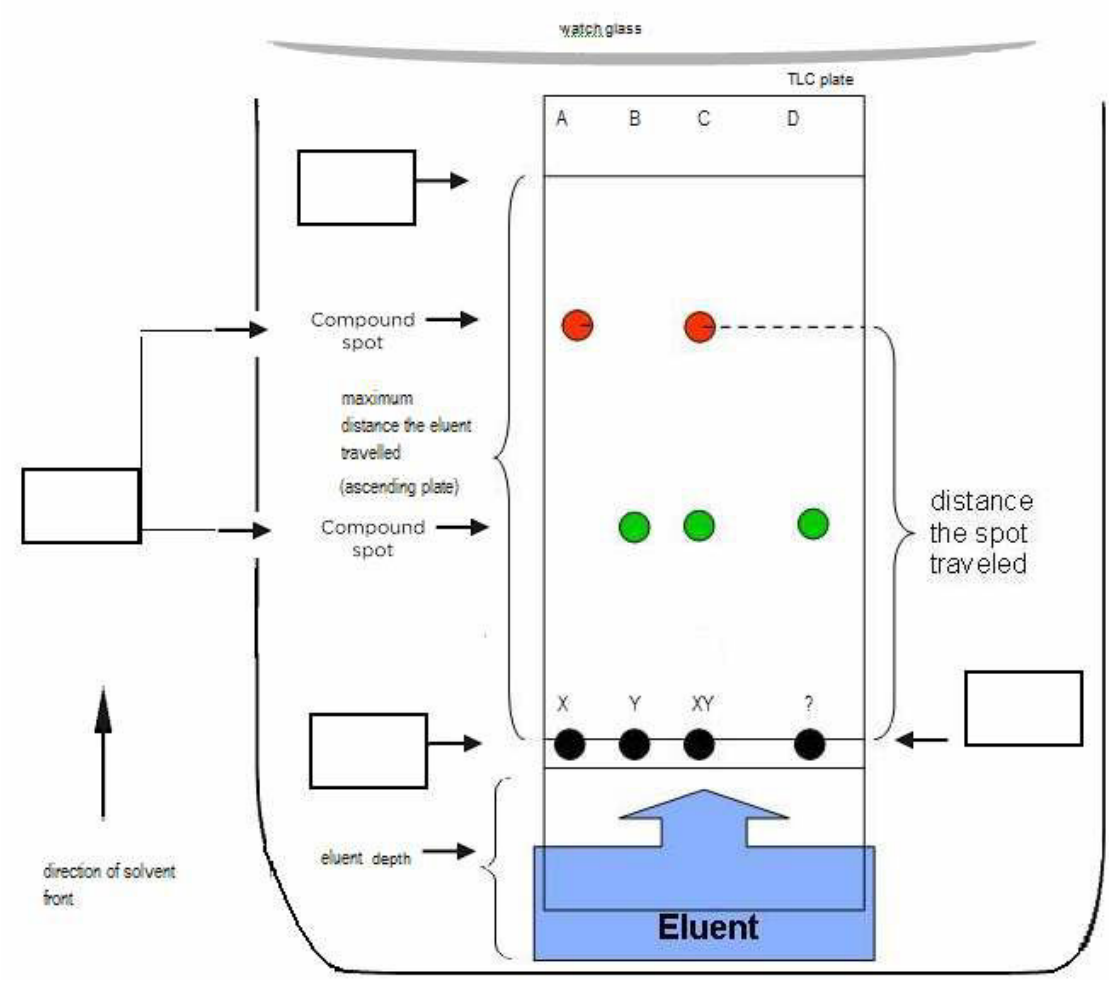
Separation techniques Handout (2015)

Thin Layer Chromatography (TLC)

Task 1. *Watch the video lecture, complete the missing information and correct any mistakes.*
https://www.youtube.com/watch?v=qdmKGskCyh8



During chromatography, a …….phase (eluent) distributes the compounds present in a mixture over a ……..phase (a solid adsorbent e.g., silica or alumina) coated on a stationary support such as a ……..of glass or plastic (This is called the TLC……).

First, the TLC plate is prepared. We handle it only by its edges or use **……** in order to avoid……. **.** Vertical lines are marked along the…….. (baseline) as a point of reference for ……or mixtures to be dissolved. Here, we are going to ……four lanes: A, B, C and D. The unknown solid is applied as a solution by dissolving it in a solvent. Some solution is drawn up into a micropipette or ……... Then, we apply a spot on the adsorbent baseline origin). This process is generally referred to as "…… your TLC plate".

The chromatogram is then developed by placing the TLC plate into a TLC ……..(a beaker containing the mobile phase, i.e., the solvent/ eluent). Then, a pre-measured volume of a suitable solvent is added to the ……..chamber. We close the beaker with a lid or watch glass and after a certain waiting period that allows the atmosphere in the beaker to be saturated with the solvent vapours, the eluent travels up or ……..the plate creating a boundary between dry and wet silica (known as the solvent……) and carrying the sample with it. This process is generally referred to as "running your TLC plate".

There are numerous ways of …….developed TLC plates. A U/V light source is commonly used in laboratories. A ……..indicator is added so that the silica fluoresces under UV light and chemicals show up as dark spots. Once we ……..the spots we remove the plate and examine the results and ……..the references. The Rf value in chromatography is a measure of distance travelled by a given component ……by the distance travelled by the solvent front. In the given developed plate, we notice that the R*f* is lane D compares …….with that of lane A.

Overall, the eluent and your sample will compete for a space (an active site) on the adsorbent (stationary phase) coated on the TLC plate. The more polar compound will win this competition and adhere (adsorb) to the adsorbent, while the rest of the mixture will move. The more polar the compound, the more it will adhere to the adsorbent and the smaller the distance it will travel from the……, and the lower its R*f* value.

Elution: the overall process of developing a TLC plate.

Excerpt adapted from: http://www.chem.ualberta.ca/~orglabs/Techniques%20Extra%20Info/TLC.html

Notes

Reference Note

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