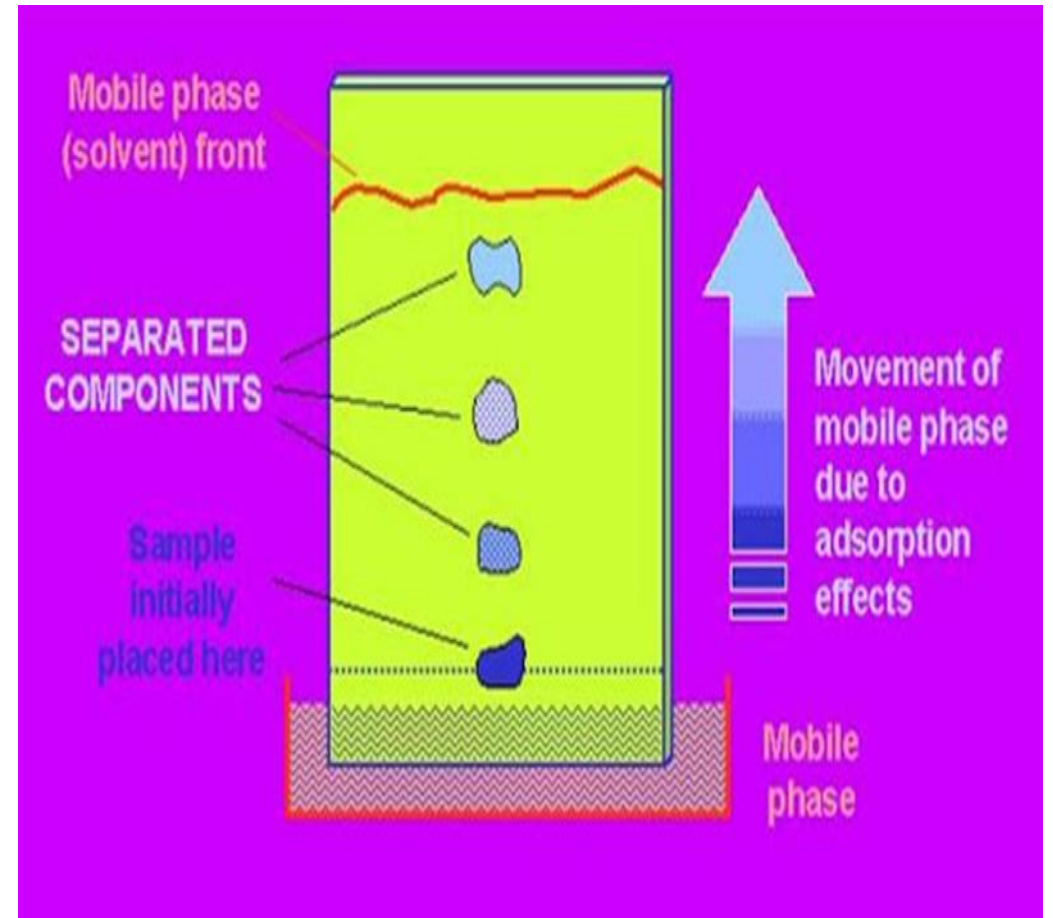


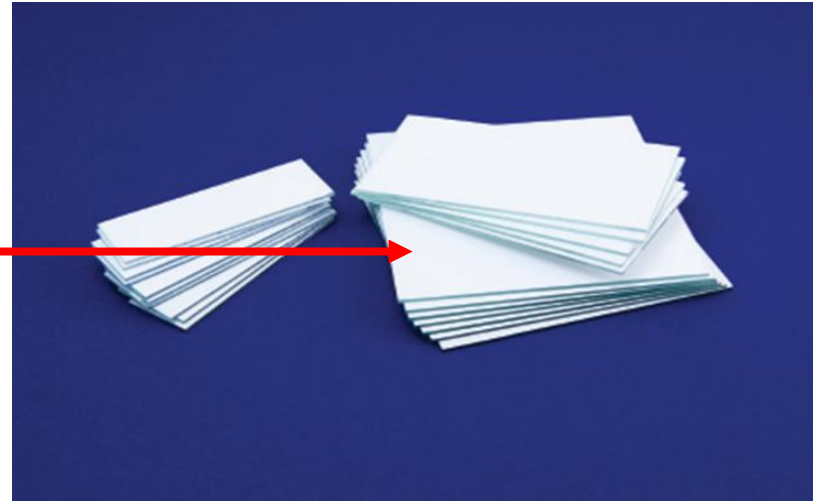
Thin layer chromatography (TLC)

- *TLC is a method for **identifying** substances and **testing the purity** of compounds.
- *TLC is a useful technique because it is relatively **quick** and requires **small quantities** of material.
- *Separations in TLC involve distributing a mixture of two or more substances between a **stationary phase** and a **mobile phase**.



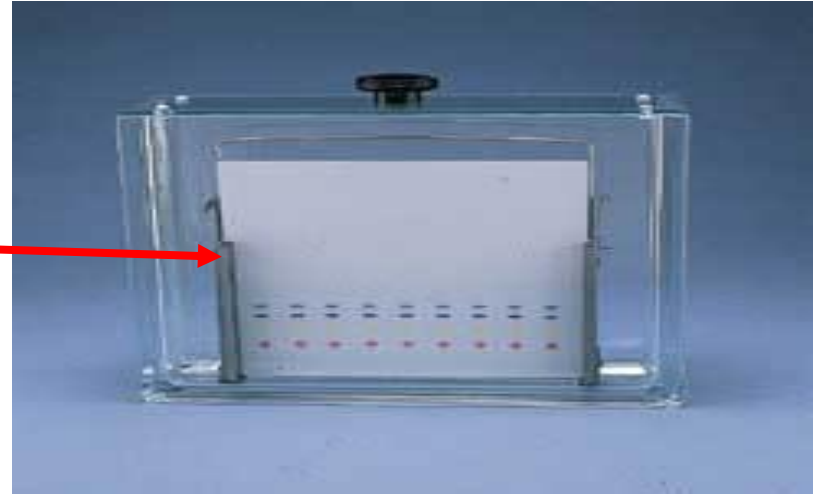
The stationary phase:

is a thin layer of adsorbent (usually silica gel or alumina) coated on a plate.



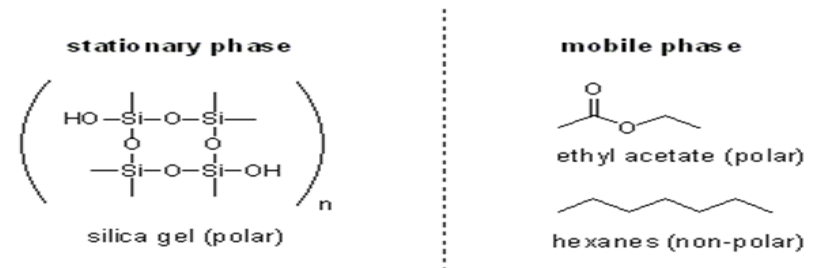
The mobile phase:

is a developing liquid which travels up the stationary phase, carrying the samples with it.

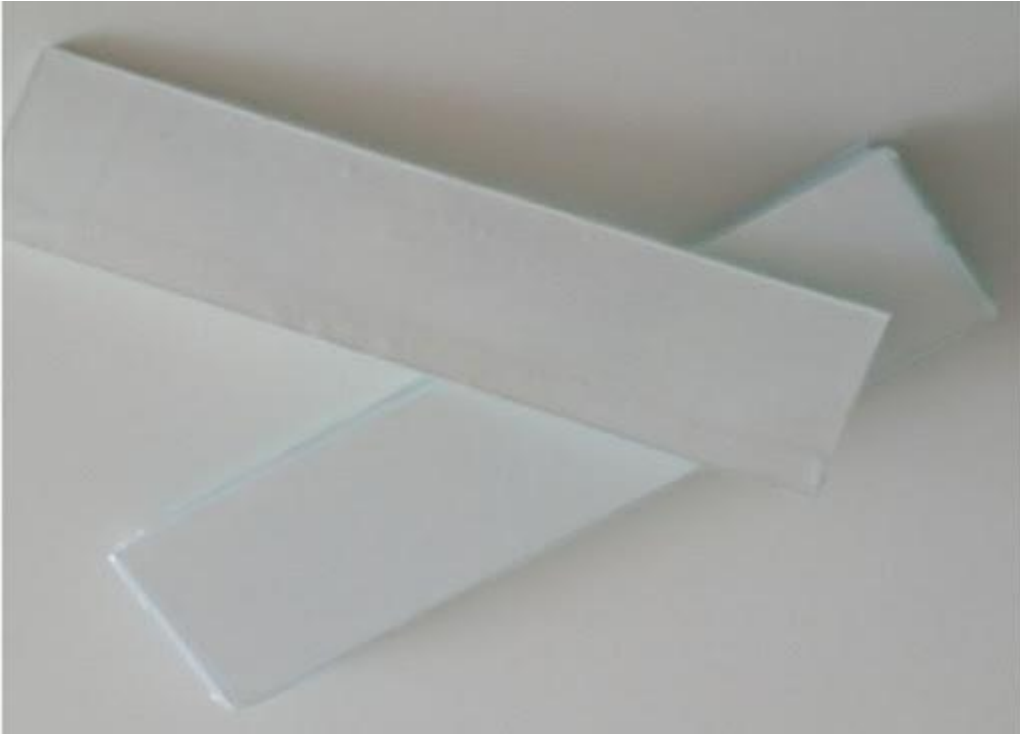


Components of the samples will separate on the stationary phase according to

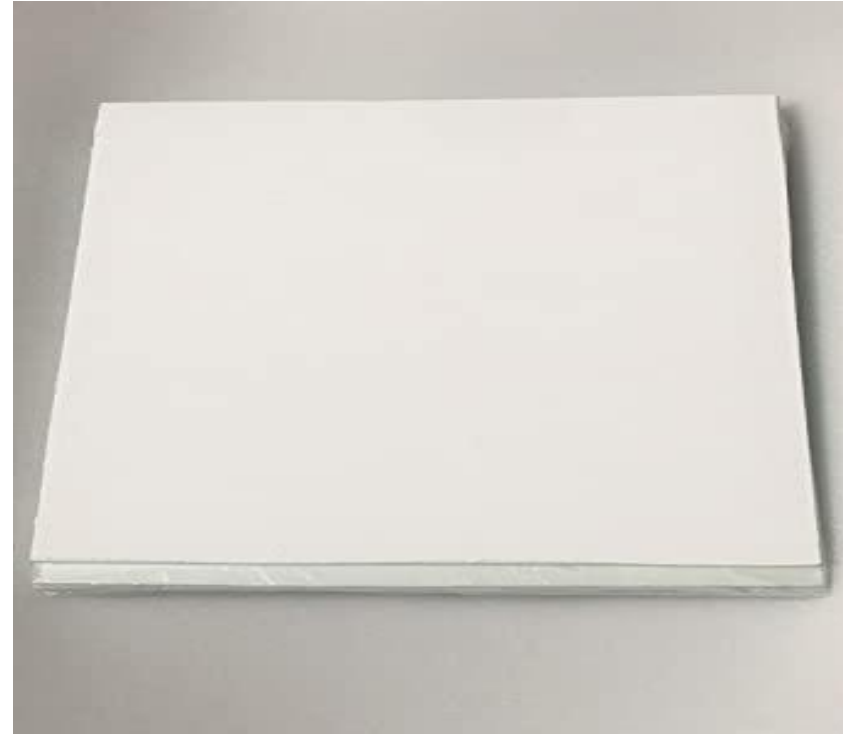
how much they adsorb on the stationary phase versus how much they dissolve in the mobile phase.



TLC Plates



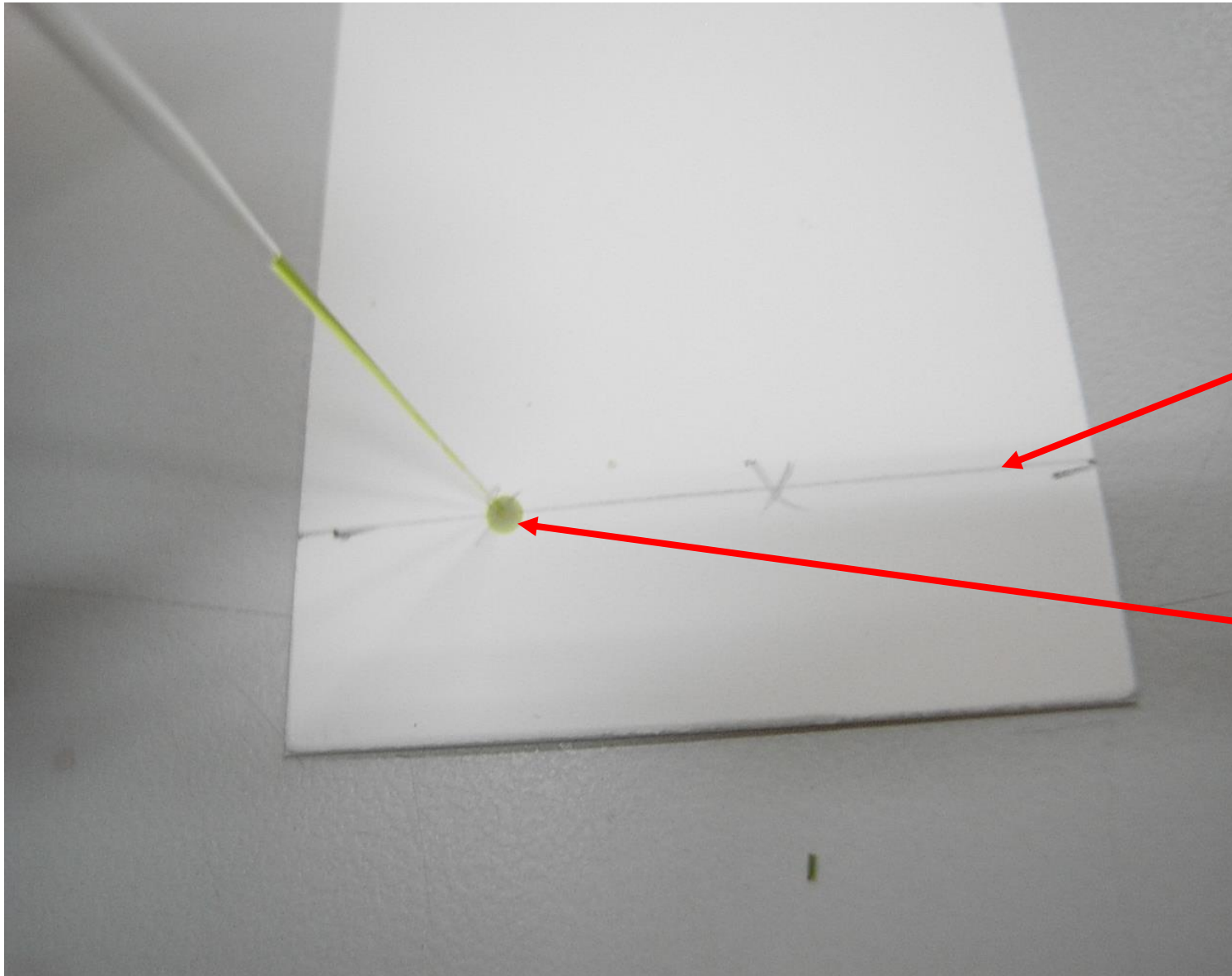
5x20cm, 0.25 mm thickness



20x20cm, 1 mm thickness

They may be glass or metal coated with silicagel or alumina

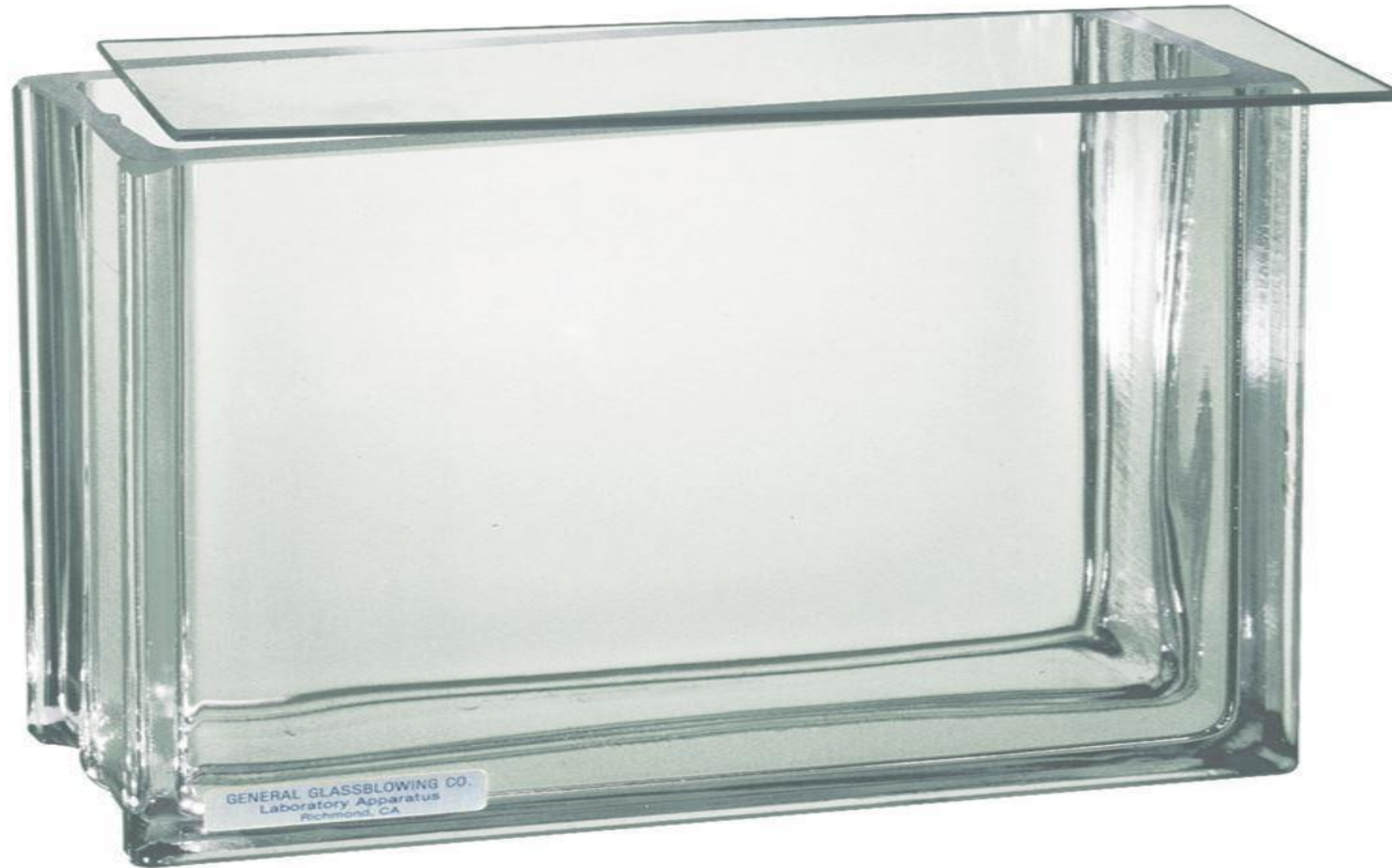
Preparation of a TLC Plate



With a pencil, draw a horizontal line about 1 cm from the bottom of the plate.

This will be origin of the plate and spotting or sample charging will be done on this line

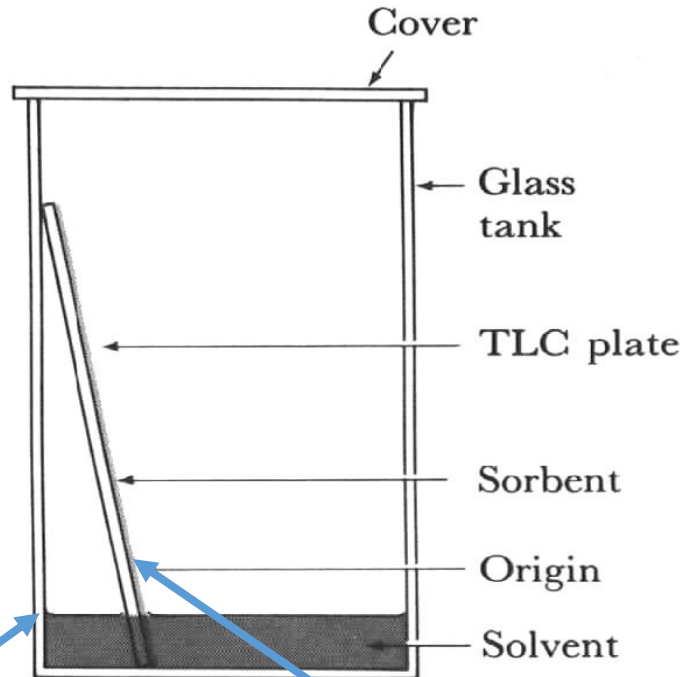
Preparation of Development Tank



To a jar with a tight-fitting lid add enough of the appropriate development liquid so that it is 0.5 to 1 cm deep in the bottom of the jar

Close the jar tightly, and let it stand for about 30 minutes so that the atmosphere in the jar becomes saturated with solvent.

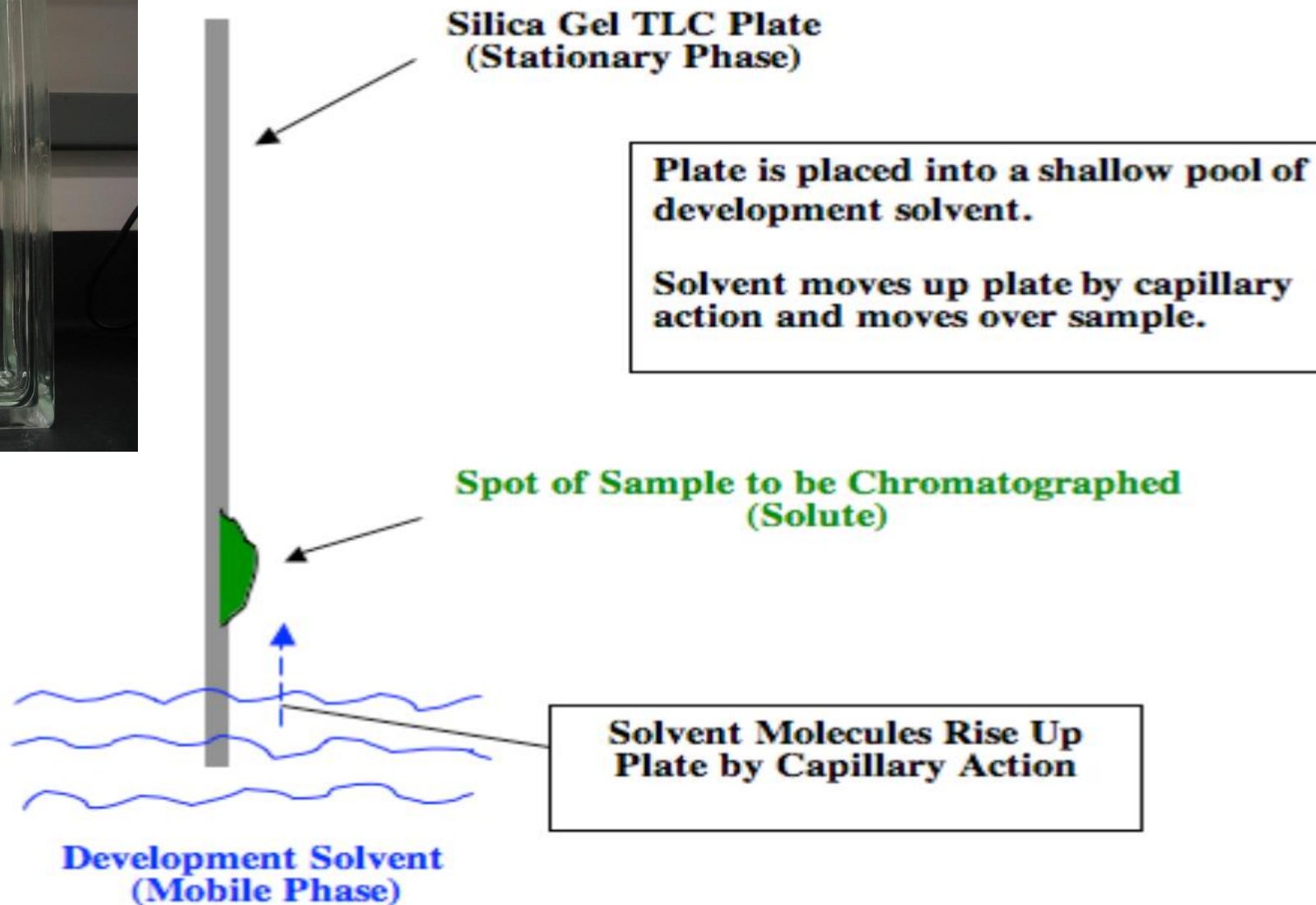
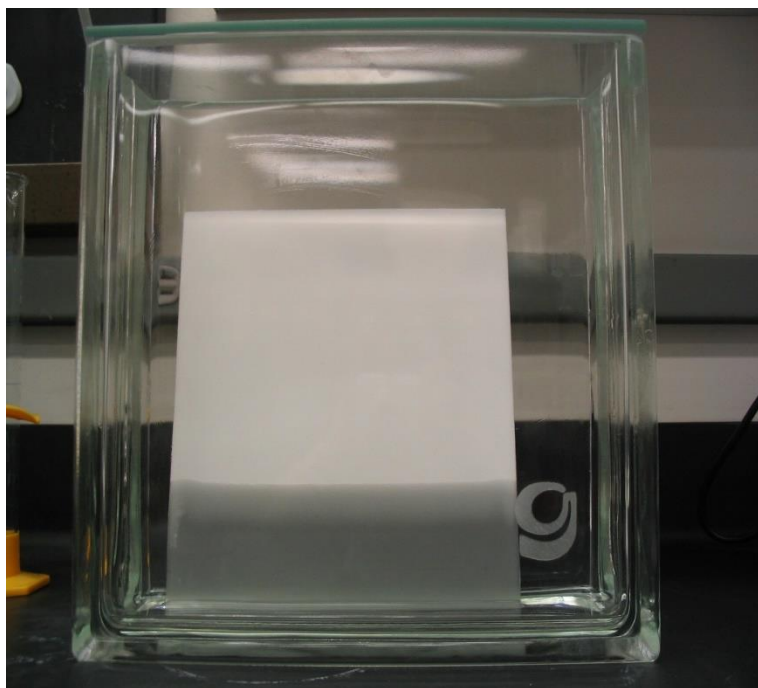
Development of the sample into the tanks



solvent level should lower than the origin of the plates, not to dissolve the sample charged

Place the bottom of the TLC plate into a shallow pool of a development solvent, which then travels up the plate by capillary action. As the solvent travels up the plate, it moves over the original spot.

A competition is set up between the silica gel plate and the development solvent for the spotted sample.



Visualization of the compounds

- The spots can not be directly observed after development. Because most compounds are colorless
- The silica gel on the TLC plate is impregnated with a fluorescent material that glows under ultraviolet (UV) light.
- Under the UV light, the spots can be outlined with a pencil to mark their locations.

