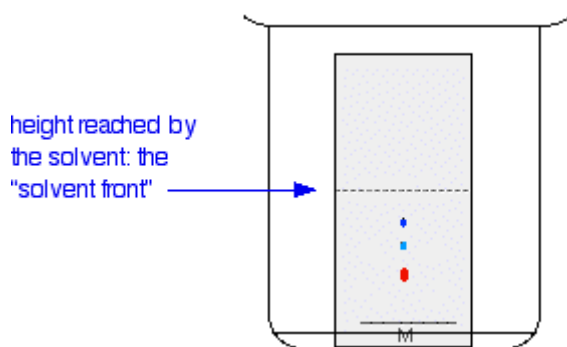


Chemguide – questions

THIN LAYER CHROMATOGRAPHY

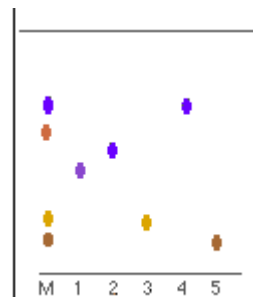
- In all forms of chromatography there is a *mobile phase* and a *stationary phase*.
 - In thin layer chromatography what is the stationary phase?
 - In thin layer chromatography what is the mobile phase?
- This diagram from the Chemguide page shows the results of a simple thin layer chromatography experiment.



- Describe briefly, but precisely, what you would have done in order to get to this stage. You can assume that you have been given a suitable thin layer chromatography plate.
- Why is there a cover on the beaker?
- In order to help identify the things in a chromatogram, you can measure the R_f value for each spot. How would you work out the R_f value for each of the spots on the chromatogram above?
- The R_f value for a particular component in a mixture is only constant if you carefully control certain variables during the experiment. Suggest three variables which would have to be controlled.
- This technique can be used to identify particular amino acids in a mixture of amino acids. However, these are all colourless. You can dry the plate and then spray it with something to make the spots visible.
 - What would you spray the plate with?
 - What is it important to do before you dry the plate?

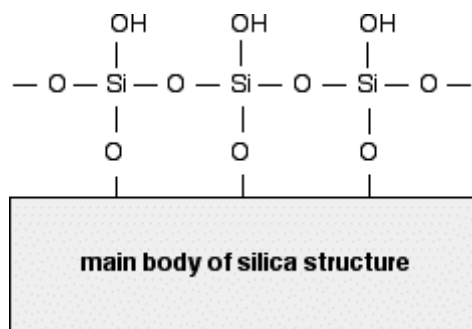
f) A mixture of amino acids (M) was tested against five known amino acids (1 to 5) and the following chromatogram was made:

What can you say about the mixture M?



Chemguide – questions

3. The surface of silica gel has a structure which looks like this diagram from the Chemguide page:



Suppose you used a plate coated with silica gel, with propanone, CH_3COCH_3 , as the solvent for thin layer chromatography. Suppose also that the mixture you were trying to identify contained

- A compound, P, which could form strong hydrogen bonds.
- A compound, Q, which formed hydrogen bonds, but not as strongly as P.
- A compound, R, which was polar, relying on dispersion forces and dipole-dipole interactions for its intermolecular attractions.

Describe and explain what the chromatogram would probably look like.