

5.4: TLC- IDENTITY AND PURITY

TLC can be a very useful resource to obtain quick and usefuyul data about purity and identity. Unlike melting point analysis, where measurements can be compared to literature values, control TLC – experiments are essential to support the presence of com- pounds of interest. TLC has an advantage over melting point analysis, however, in that it can be applied to both liquids and solids.

Let us say that a student brominated acetophenone using bromine (scheme 1). Because the product contains a C-Br bond, IR -spectroscopy is not very useful (the peak assosicated with a C-Br lies in a region of the spectrum that is hard to observe). Instead, the student performed a TLC analysis.

In order to get conclusive data from the TLC analysis, the student made up a TLC – plate with four samples. Spot A is the starting material acetophenone, spot B is a stock solution of the product, spot C is the product obtained by the student, and spot D is a co-spot of two solutions, the stock solution of product (spot B) and the student's product (spot C).

The TLC -analysis gives us important information about the experiment. The first result is the student's sample, C, which appears to be two compounds. One of those (the darker spot) agrees with authentic product (B),but the other (the lighter spot) agrees with the starting material (A). This suggests that the student's product is contaminated with unreacted starting material. Spot D supports this interpretation: samples B and C produce a single dark spot in D.

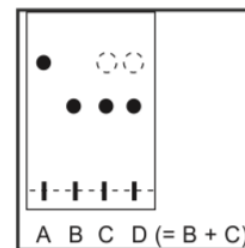


Figure 5.5. The TLC plate obtained by the student.

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