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Editorial

TLC

I had finished my Ph.D. in 1970 and worked for many years in industry before the technique of HPLC became routinely used: first, in the analytical laboratory and subsequently by process chemists as a tool for following reactions as well as analysing products. I still remember the days when TLC was used, not just for qualitative analysis but also for accurate quantitative analysis of finished APIs. It is still used—in its HPTLC mode—by some companies, particularly in Germany, as an accurate quantitative method of analysis, but the technique has been forgotten as a quantitative method by many younger chemists.

TLC has some major advantages over HPLC—cost being an important one. This means that it can be used in all circumstances, such as on the manufacturing plant. Since it is simple to use, process operators can easily perform the technique accurately. The second major advantage is that you see everything—if you use correct visualisation (spraying and heating as well as UV visualisation)—whereas with HPLC it is possible for impurities either to be retained on the column or to be late eluters which impatient organic chemists, but hopefully not analysts, might miss.

On a consultancy project in which I was recently involved, TLC was the only way in which a particular impurity could be detected and quantified. It is a useful adjunct—or a reality check—to HPLC in many instances.

For the nonchemist TLC stands for tender loving care. For the older chemist, such as I, TLC can mean either Thin Layer Chromatography or in the past could mean Thick-Layer Chromatography, otherwise known as Preparative Thin-Layer Chromatography. Thick-layer chromatography, with a silica layer 2 mm thick and plates 1 m wide, was my favoured separation method in my Ph.D. lab work, where I regularly separated 10 g of reaction mixture almost quantitatively and quickly on banks of large plates, using a large fish tank with several litres of solvent as eluent. Of course, I had to make the plates myself, using several hundred grams of silica. In a few hours, the parallel bands of products and byproducts could be separated whilst I got on with other work (or went for a beer!), whereas column chromatography, without an automated fraction collector, needed constant attention and used a lot more solvent. Of course, I still had to scrape off the bands of silica and extract the pure products/byproducts, but with practice, this was a quick and easy task.

For those wishing to know about quantitative TLC there are some excellent books. I do not know whether the old "bible" of TLC by Stahl[1] is still available, but it is/was an excellent book. Two more modern books have recently appeared[2,3] and may be a useful addition to your library.

So those of you who have abandoned TLC—particularly quantitative TLC—in favour of only HPLC, remember that TLC also can mean: The Lowest Cost.

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(1) Stahl, E. *Dunnschlicht-Chromatographie, ein Laboratoriumshandbuch* (*Thin-layer chromatography. A laboratory handbook*); Springer-Verlag: Berlin, 1962 (2nd ed., 1969 in English).

(2) Wall, P. *Thin Layer Chromatography: A Modern Practical Approach*; Royal Society of Chemistry: Cambridge, UK, 2005 (ISBN: 0-8540-4535-x).

(3) Fried, B.; Sherma, J. *Thin Layer Chromatography*, 4th ed.; Marcel Dekker: New York, 1999 (ISBN: 0-8247-0222-0).

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