

## Citation Classics

**Mangold H K.** Thin-layer chromatography of lipids.  
*J. Amer. Oil Chem. Soc.* **38**:708-27, 1961.

**The author describes the technique of thin-layer chromatography (TLC) and its applicability in the lipid field, stressing the simplicity, sensitivity, capacity, versatility, and efficiency of the method. [The SC<sup>®</sup> indicates that this paper was cited 560 times in the period 1961-1976.]**

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"This paper was certainly not written with an aim to make it a 'Citation Classic'; in fact, it was almost not written at all. Early in 1961, while I was working at The Hormel Institute, a research unit of the University of Minnesota, in Austin, Minnesota, the American Oil Chemists' Society invited me to give a talk on thin-layer chromatography during a short course the society was planning to conduct at the University of Rochester, in July of that year. This presentation was to be published in *Journal of the American Oil Chemists' Society*. Although I had in mind to enter matrimony shortly after I had received this invitation, I considered it easily possible to get married in April or May, write the paper on our wedding trip—a voyage across the Atlantic—have it typed by my wife, Anne, and give the talk a few weeks later. How foolish I was! I did give the talk at Rochester, N.Y., but the deadline for submission of the manuscript had long passed when I started writing.

"Actually, I was in a perfect situation for writing: Professor W.O. Lundberg, who headed The Hormel Institute, had given me a spacious, though empty, laboratory which I tried to equip, at least with glassware and chemicals. One of the first items I purchased was the basic equipment for thin-layer chromatography which Professor E. Stahl had developed.<sup>1</sup>

"In writing the article for *Journal of the American Oil Chemists' Society* I certainly was at a great advantage, inasmuch as this was to be the first survey of the method to be published. Moreover, although TLC is useful in the analysis of almost all non-volatile organic substances, I was convinced that adsorption-TLC would become the method of choice for the fractionation of complex lipid mixtures—and this holds true, even today. I demonstrated that not only adsorption but also other principles of chromatography, such as reversed-phase partition, are applicable in TLC and that the method is valuable also as a semi-preparative tool. Still, I did not try to make it appear to be the panacea for all problems but, instead, I emphasized that TLC is fully exploited only when it is used in conjunction with other techniques. I showed how the method could be combined with gas chromatography, and I tried to integrate it in a system of lipid analysis.

"Since, at that time, I wasn't burdened with any administrative duties nor too many speaking obligations, I could manage to try out various aspects of TLC at the lab bench between the hours I spent writing. Thus, I could reveal numerous tips and hints and personal experiences I had gained with the new method. In addition, I included several experimental procedures in much detail. At the time I wrote this manuscript, I had published four papers on the use of TLC in the lipid field, two of them with D.C. Malins, who is now Director of the Environmental Conservation Division at the Northwest Fisheries Center in Seattle, Washington; two more publications were in press.

"As time went on I developed more and more enthusiasm, not only for the method but also for the job of writing about it. What was meant to be a review became a bit of a 'manual' on the use of TLC with emphasis on the method's application in the lipid field.

"For over fifteen years now, and even today, I am getting reprint requests for the article I published in 1961. Of course, I am very pleased to see that people still find it useful."

### REFERENCE

1. Pelick N, Bolliger H R & Mangold H K, *Advances in chromatography*. (Giddings J C & Keller R A, eds.) New York: Marcel Dekker, Inc. Vol. 3, pp. 85-118, 1966.