Optimierung in der HPLC

By R. E. Kaiser and E. Oelrich,
Dr. Alfred Hüthig Verlag GmbH, Heidelberg, 1979.

This book marks a milestone in chromatographic history as the first of its kind that clearly recognizes the acronym HPLC in the title. Besides this perhaps facetious statement, however, there is very little to laud about this softbound volume which is published in the "Chromatographische Methoden" series and consists of two rather disjointed parts. The first, which constitutes more than two-thirds of the text, is written by Kaiser and carries the subtitle "Correct evaluation — physical, chemical and mechanical optimization", whereas the second, rather appendicular, part deals with the technology and application of column cassettes for HPLC. The author claims that such chromatographic appliances, which were born in an attempt to improve the plumbing associated with the column in the chromatograph, are the panacea for underutilization of the high-performance columns presently available. The idea may be sound, yet the chapter does not go further than the description of a commercial cassette having somewhat dubious value in practice and some bread-and-butter advice about how to reduce extracolumn dead volume.

Indeed, extracolumn band spreading, or more precisely, Kaiser's preoccupation with the subject, pervades every section of the book and is the mortar that keeps it from falling apart. Cynics could say that he uses the glamour of HPLC and a deceptive title to promote his so-called abt-concept. This approach to evaluate the performance of a chromatographic system is based on a quasilinear relationship between peak width and retention which can be observed under isocratic elution conditions and is claimed to be useful to estimate the magnitude of extracolumn band spreading. The author's desire to alert us to a possible deterioration of chromatographic efficiency due to extracolumn effects is commendable; in the opinion of this reviewer, however, it gives rise to an issue completely out of proportion as made *en évidence* by the publication of this book, for instance. His reasons stem from the fact that most chromatographic texts deal with column efficiency

and brush over the sources and effects of extracolumn band spreading. Truly, we should expect the manufacturers of HPLC (high-priced liquid chromatography) equipment to design and build liquid chromatographs that do not distort but reflect with high fidelity the intrinsic efficacy of the best available columns. Whereas this is unfortunately not always so, the abt-concept is not going to solve the problem despite the efforts made by the author over the years to win acceptance. Noted chromatographers, whose analyses this reviewer fully respects, repeatedly stated, some of them *palam et publice*, that whatever the abt-concept entails, it is either trivial or false but in any case useless.

Now we have it in a book flying with the wings of HPLC. At places, *vide* p. 47, it becomes maudlin, true confessions of a rebel against the established theory of HPLC, who does not capitulate. It is sad that the book has turned out this way and to polemics, because it contains numerous insights into problems of HPLC and horse-sense advice for handling chromatographic data and instruments. Kaiser is an eminent scientist, a pioneer of gas chromatography, and the director of the respected *Institut für Chromatographie*. What a pity that, in a messianic attempt to spread the abt-concept, he has been carried away into the waters of liquid chromatography and has written this book without sufficient preparation for the problems of this branch of chromatography where chemical phenomena dominate optimization. After all the years of our obsession, inherited from gas chromatography, with the instrument and column efficiency, chemistry is returning as the protagonist in HPLC. We have reached the point where neither a novice nor someone seasoned in HPLC would accept the notion promulgated by the abt-concept pervading this tome that optimization through better plumbing is the abc of HPLC.

Therefore, the 28-page-long section on the use of HPTCL (high-performance thin-layer chromatography) for pre-HPLC selection and optimization of the chromatographic system may be the most useful part of the book — to those who believe in this approach.

Cs. Horváth