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Book review

Capillary Gas Chromatography
David W. Grant; John Wiley and Sons, Chichester, New York, Brisbane 1996, viii+295 pp.; ISBN O 471 95377 6; price £45.00.

This is the fifth book appearing in Wiley's Separation Science Series, edited by R.P.W. Scott, C.F. Simpson and E.D. Katz.

The author belongs to the early group of scientists who had the opportunity to be a key participant in the revolutionary development of gas chromatography. In the preface, he expresses his exciting feeling when Marcel Golay presented the basic theory and two examples of the potentiality of gas chromatography performed in a capillary at the Amsterdam Symposium on Gas Chromatography in 1958, and his spontaneous decision to attack this new field of research. As one of the witnesses of this starting period, I remember very well the unique and creative atmosphere which was the beginning of a phenomenal development of separation methodology and instrumentation throughout gas chromatography in the fifties (sixties), high performance liquid chromatography in the sixties (seventies), supercritical fluid chromatography and extraction in the sixties to eighties, and development of capillary zone electrophoresis or, better, the family of electromigration methods from the eighties up to present.

I do not know any other analytical technique which had such an intensive and creative development producing every decade a principal approach during a half of a century. This is also the reason why so many books were published on common and particular problems of separation science, and consequently of the fact that practically all publishing houses dealing with natural science literature are issuing chromatographically profiled series (sometimes profiting more from this boom than from the selection of right authors).

Capillary gas chromatography can be accepted now as a matured methodology with a great value for research in many branches of science, as well as for industrial control and testing. The present book is well placed among many others published in the field of gas chromatography.

The structure of Grant's book is rather classical. General introduction to capillary GC; Theory of open tubular columns; Capillary instrumentation; The open tubular columns; Porous layer open tubular columns; Sample introduction; Sample preparation; Analysis and optimalization; Multidimensional capillary GC and column switching, and an Index, are the subtopics.

The book contains a good collection of data covering basic equations, proofs of performance, as well as the useful instrumental and methodical details.

The summary of each chapter gives a very good evaluation of the matter discussed there. The references following each chapter are selected critically and thoroughly; nevertheless from the all 170 items only 41 were published in the eighties and 8 are later than 1990. This cannot be held as a drawback since this reflects the maturity of the technique and is certainly useful for teaching purposes.

As to the content, I have only a few critical remarks: Mass flow and concentration detectors (subchapter 3.8.1) are a little bit more complicated (see e.g. J. Novák: Quantitative Analysis by Gas Chromatography, M. Dekker, New York 1975 and a later edition – he discussed the pressure dependence of mass flow/concentration behaviour of detectors).

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The chapter 'The open tubular column' (p. 106) speaks too briefly about roughening of the surface and adsorption on it and chapter 5 'PLOT columns' should not overlook the classical paper by K. Tesařík and M. Novotný (in Gas Chromatography, 1968, ed. H.G. Struppe, Akademie Verlag, Berlin).

In conclusion, the author paraphrased what is valid for the whole gas chromatography and what can be found in many GC books for the special case of capillary mode. Because the text is well readable and illustrated, and printed with a minimum of printing errors (like Zswett on p. 3), the book can be recommended not only for students and beginners but also for teachers and anyone who is searching for a ripened text and well-balanced data on (capillary) gas chromatography.

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