



Book Review

Split and splitless injection for quantitative gas chromatography (concepts, processes, practical guidelines, sources of error), 4th edition

Konrad Grob, Wiley-VCH, Weinheim, 2001, xx + 460 pp., ISBN 3-527-29879-7, £95.00

Routinely used techniques should be comprehensively investigated to enable understanding of the mechanisms involved and systematic discovery of the critical samples and conditions. Capillary GC in general and injection in particular are demanding techniques. They are full of pitfalls, but also rich in possibilities. Injection into GC capillary columns can be confusing, because there are so many different techniques. This volume therefore commences with a brief survey of the many injection techniques available. There are five broad sections, the first of which covers syringe injection into hot vaporising chambers. There are several reasons for the general success of the syringe for sample introduction in GC. Namely, the flexibility with which the sample volume can be adjusted, the possibility of releasing the sample in a predetermined region of the vaporising chamber, withdrawal of the device after depositing the sample, and easy cleaning of the sampling device. The second section covers sample evaporation in the injector. According to the classical concept of split and splitless injection, the sample liquid leaving the syringe needle must be evaporated before it reaches the column entrance.

The third section discusses split injection. During split injection the vaporised sample is divided into two unequal parts, with only a small proportion of the sample transferred into the column by the flow of the carrier gas, the major part being vented through the split exit. The fourth section is devoted to splitless injection, i.e. injection without split flow. Before the sample is introduced the split exit is closed. The carrier gas therefore transfers nearly all of the sample vapour into the column, because this is the only exit from the vaporisation chamber. The final section discusses aspects of injector design. Although the requirements are quite different, split and splitless injection have always been performed with the same injector.

This volume provides a valuable insight into the operating principles and mechanics of GC systems. Such information will allow regular users of GC techniques to better understand their equipment and assist in solving both instrumental and analytical problems.

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