

Silica Gel and Bonded Phases: Their Production, Properties and Use in LC

By R. P. W. Scott, John Wiley & Sons, Chichester, 1993, 261 pp.

The book is the fourth volume in the Separation Science Series edited by R. P. W. Scott and C. Simpson and covers briefly the basic principles of silica gel chemistry, the synthesis and properties of silica-based bonded phases, and their application in reverse-phase chromatography (RPC). The book provides an easy-to-read introduction into the subject from the authors with 30-year experience in this field. It is divided into 11 short chapters which are arranged in a logical and well-balanced sequence.

Chapters 1 and 2 give insight into the chemistry and manufacture of silica gel (xerogel) with particular emphasis on

processes of milling, sizing and size characterization. The physiochemical and size exclusion properties of native silicas are treated in Chapters 3 to 5. In this part the assessment of decisive quantities are thoroughly described including the necessary instrumentation and the test methods. Chapter 3 also discusses the packing procedures of silica HPLC columns.

Chapter 6 summarizes the authors' view on solvent/solute interactions with the silica gel surface aiming for a better understanding of the retention mechanism in HPLC separations.

Chapters 7 to 9 focus on the different classes of bonded phases, especially on the synthesis and characterization of silanized silicas applied to RPC. Chapter 8 discusses in depth the fluidized technique for bonding silanes to the silica developed by C. Simpson and coworkers. Chapter 10 is devoted to so-

lute/solvent interactions with the surface of silanized silicas on the basis of adsorption isotherms of analytes in solution.

Chapter 11 summarizes the results of the preceding chapter and adds a thermodynamic treatment of solute retention and of the mechanism of retention. The appendix contains a list of selected commercial instruments for grinding, size classification and testing of silica gels.

In conclusion, the topics of individual chapters are thoroughly treated and discussed. This enjoyable little book is recommended to be included in the library of a practicing chromatographer and in all university library collections.

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