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Forensic and clinical applications of solid phase extraction

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The author introduces the wide field of solid phase extraction (SPE) by giving a short survey of the history of extraction techniques, from liquid-liquid extraction to diatomaceous earth extraction and finally to bonded phase extraction, the latter including simple reversed-phase extraction as well as the sophisticated copolymeric ion exchange (so-called mixed mode) extraction.

In separate chapters, basic information is provided on the chemistry of silica-based SPE, including the production of silica gels, their particle shape and size. A detailed description of the synthesis of bonded phase sorbents is also included. Although the practical use of this section for SPE users is doubtful, it enables a deeper understanding of the subject matter.

The use of different strategies of SPE is demonstrated by the presentation of applications i.e. SPE as filter (GHB from urine), SPE selective adsorption (gabapentin from serum, plasma or whole blood) and SPE in copolymeric interactions (various drugs and drugs of abuse from urine, blood and tissue samples).

One chapter is dedicated to the optimisation of SPE. In a step-by-step procedure the reader is instructed on how to consider all aspects necessary when new extraction

methods are developed. Another chapter deals with a wide range of different matrices which may occur in forensic and clinical toxicology. These are predominantly urine and blood samples but also so-called alternative matrices such as hair, sweat, saliva, meconium, different tissues, bone, nails and sebum.

Furthermore the book provides a collection of SPE application protocols for the most important drugs and drugs of abuse, relevant in forensic and clinical toxicology, e.g. amphetamine and amphetamine derivatives, opiates, cocaine and its metabolites, cannabinoids, benzodiazepines, hallucinogens like LSD and psilocin, phencyclidine and related substances and β -adrenergic agents.

An unambiguous focus of these applications is on the use of the Clean Screen copolymeric ion exchange columns. This is probably due to the fact that the authors are associated to United Chemical Technologies, the manufacturer of Clean Screen.

All in all this book meets the requirements of its title. It is a handbook which provides the theoretical background as well as a practical guide and for this reason it can be recommended for all practitioners who are engaged in the development and optimisation of SPE methods.

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