Preface

Solid-phase microextraction (SPME) is a sample preparation technique introduced by Dr. Janusz Pawliszyn, professor of University of Waterloo, in 1990. Compared with traditional sample preparation techniques, SPME combines sampling, enrichment, separation, and introduction into one step and becomes a simple, fast, efficient, and green sample preparation technique. Since its inception, SPME has been widely used in environmental, pharmaceutical, food, and aroma analyses, as well as the studies of chemistry, materials, biology, medicine, etc. In recent 10 years, the hot research areas of SPME include developing novel fiber coatings based on nano or porous materials, detecting free concentration of analyte in complex sample matrices, and nondestructive sampling of living systems using in vivo SPME. The purpose of this book is to summarize the applications of SPME in recent years.

In this book, 10 representative chapters cover the recent development of SPME in coating preparation, environmental analysis, in vivo sampling, etc. Chapter 1 briefly introduces the fundamental knowledge of SPME technique. In Chap. 2, the progresses of the new SPME coating preparation in recent years are summarized. Then, from Chaps. 3 to 7, the applications of SPME for environmental samples, including aerosol particulate in air, complex water sample, and soil/sediment, are reviewed. The main feature of SPME for sensing the freely dissolved organic compounds in complex environmental samples using active and passive SPME sampler is highlighted in these chapters. In addition, SPME combined with derivatization techniques to overcome the challenge of polar compounds' analysis in environmental samples is also summarized and discussed. In the last three chapters, the most distinguished application of in vivo SPME technique is reviewed and discussed, including tracing volatile organic compounds' emission from plant and analyzing the metabolites of pharmaceuticals.

I believe this book will be useful to the researchers in the fields of chemistry, materials, environment, etc., especially who are doing works relative to SPME as well as the newcomers who want to employ the SPME techniques. I am especially grateful to the authors and my colleagues. This book cannot be done without their outstanding contributions.

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