

Preface

Green technologies demand the use of safer instrumental techniques for the separation, identification and purification of organic and inorganic analyte. Nowadays, special emphasis has been given to the separation and purification of bioactive components like vitamins, amino acids, toxins, carbohydrate etc. However, the concern about the use of toxic solvents has been completely ignored. Therefore, to make the system convenient, it is advisable to use non-toxic solvents or techniques for the separation and purification. So that life can sustain a long without exposure of harmful toxic solvents.

This book would be a wide spectrum scientific resource on the use of green chromatographic techniques for the separation, identification and purification of bioactive as well as inorganic analyte. The aim of this book is to provide in depth knowledge of the green techniques which utilize green solvents. In some chapters the technique itself is green or using non toxic environment. However, the book is basically aimed to merge the terms green techniques and green solvents as **green chromatography** which may prove the useful resource to the scientist working in the field of analytical, organic and pharmaceutical chemistry.

Green Chromatographic Techniques: Separation and Purification of Organic and Inorganic Analytes' edition with *most up-to-date reference* work will prove a necessary resource for scientists, R&D industrial specialists, researchers, upper-level undergraduate and graduate students, Ph.D. students, college and university professors working in chemistry, chemical and biochemical fields. Based on thematic topics, the book edition contains the following 9 chapters:

Chapter 1 addresses some practical and theoretical aspects of counter current chromatography (CCC), highlighting the specific advantages of this support-free liquid stationary phase purification greener technique.

Chapter 2 is dealing with new preparative method of separating concentrated solutions of mineral electrolytes into individual components by size exclusion chromatography on neutral nanoporous hyper-crosslinked polystyrene sorbents. Basic principles of the method as well as factors determining the selectivity of separations are discussed.

Chapter 3 is dealing with the supercritical fluid chromatography which is known as a green approach for the separation and purification of organic and inorganic analyte.

Chapter 4 provides historical development of thin-layer chromatography towards becoming modern, automated, high resolution technique in the form of high-performance thin-layer chromatography, and their further advances in miniaturization of chromatographic beds in the form of ultra-performance thin-layer chromatography (UPTLC).

Chapter 5 highlights the different aspects of gas chromatography in the light of green techniques starting from sample preparation to the selection of mobile phase and chromatographic columns. Coupling other analytical tools with GC to focus the versatility and high accuracy of analysis with dual system of separation and detection is also discussed.

Chapter 6 is dealing with the green reversed-phase high-performance liquid chromatography (RP-HPLC), and green thin layer chromatography (TLC) methods used for preparing and purifying allicin, a garlic-derived organosulfur compound.

Chapter 7 is dealing with some important green sample preparation techniques used for the separation of organic analyte in complex matrices.

Chapter 8 is focusing the determination of organochlorine pesticides was made through the gas chromatography method using capillary columns and detector with electrons capture.

Chapter 9 describes the retention mechanisms for size exclusion chromatography (SEC) and applications of SEC in the biomedical and pharmaceutical sciences. Finally, the use of SEC as a technique for speciation analysis of polydimethylsiloxanes (PDMS) is presented.

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