Preface

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This special issue of the Journal of Chromatography A reviews and highlights many of the advances and developments that have taken place in recent years in sample preparation methods for chromatography and electrophoresis. For too long the chromatographic community largely concentrated on the separation stage of column and eluent, detectors and data analysis. However, all this is valueless if the extract being injected is not representative of the original sample, is too dilute or contains so much interfering material that the compound of interest is masked or the instrument is contaminated. The necessary sample preparation was often ignored and was rarely the subject of substantial study. However, this situation is changing, new ideas and concepts have been introduced, often based on chromatographic principles, and new technologies have been developed to provide sample preparation methods, which are faster, more selective, significantly reduce interferences or provide enhanced concentrations. In addition there has been a move to methods requiring smaller sample sizes, although care must be taken these are representative, and to the examination of more difficult matrices. A second trend has been to save time, to minimise or (virtually) eliminate the use of organic solvents and to provide clean extracts that reduce contamination of the instrumentation and columns. The Journal recognised this trend some years ago and introduced sample preparation as a discrete grouping in the issue indexes thereby bringing together the changes and developments. There have also been other special issues from conferences such as the Ex-Tech series where sample preparation has been the dominant theme of the meeting. This current volume aims to cover many of the emerging methods as well as reviewing their applications to a wide range of matrices and analytes and reflects many of the developments and changes in recent years. The most strongly represented area is solvent-free or minimal solvent extraction methods and their enhanced selectivity, including solid phase extraction, stir bar extraction, single drop extraction, the use of molecularly imprinted polymers and membrane extraction. The sensitive and selective examination of analytes in complex biological, food, and environmental samples is both reviewed and illustrated by applications. Throughout there is a concern with the quality of the results and an emphasis on the ability of the methods to provide results that are analytically correct and useful to the user.