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Foreword

Chromatography has just celebrated a century of evolution, in the main as a tool for analytical separations. The spectacular success achieved in this regard has tended to overshadow alternative applications, such as the use of chromatography for the estimation of physicochemical properties of either samples or components of the mobile or stationary phases. It was only a small step to the estimation of physicochemical properties from measurements of peak location or broadening in well characterized separation systems once a physical understanding of separation mechanisms had been established. Compared with classical static methods, chromatographic methods have several advantages. Measurements can be made for impure samples, very small sample sizes are sufficient, and easy variation of temperature, etc., is provided for. In addition, chromatographic instruments are widely available in most laboratories, obviating the need for the purchase of specialized instruments for occasional measurements. The same features are applicable to electrophoresis, which because of differences in separation mechanisms, allows for the estimation of complementary properties to chromatographic techniques in many cases with equal facility.

The general purpose of this special issue is to set out a series of tutorial articles and topical reviews on the rich diversity of physicochemical property measurements that can be made using chromatographic and electrophoretic techniques. A second goal was to provide a wide ranging discussion of the requirements and limitations of the techniques employed. Although chromatographic and electrophoretic measurements are easily made, the special conditions and controls for reliable estimations of physicochemical properties are often neglected or incorrect models assumed with disastrous results. Since scientists, in general, do not set out to make poor measurements, it is hoped to raise the awareness of the specific conditions necessary for the accurate estimation of common physicochemical properties by chromatographic and electrophoretic techniques. It was a pleasure to work with the various authors who unselfishly gave of their time and effort to make this volume possible.

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