

Editorial

The Special Issues of Electrophoresis on Fundamentals series was established in 2003, so this is the seventeenth issue of this series. It proved to be a successful idea to collect the fundamental aspects of electrophoresis and other separation methods into a specialized issue as the visibility and impact of the Fundamentals has been contributing to substantially improving fundamental knowledge. The question raised in 2003 in the first issue on Fundamentals: "Is there still a need to build fundamentals?" can still be answered with a Yes, Definitely. To expand the knowledge on fundamentals, Bohuslav Gaš and Prashanta Dutta coedited this Special issue and we believe you readers will enjoy this issue.

So what we bring here? The special issue features twenty research papers and two min reviews. The first review is on fluorescence spectroscopy used for sensitive detection of analytes in capillary, gel and microchip electrophoresis. Authors particularly discussed the working principle of various fluorescence methods, such as fluorescence microscopy, fluorescence recovery, fluorescence anisotropy, super-resolution microscopy, etc. and their applications in electrophoretic separations. The second review primarily focuses on the theoretical aspects of slip velocity during the electric field driven flow on a hydrophobic surface. While the review papers go in depth on narrower topics, regular research papers address various important fundamental issue and novel application in electric field driven phenomena. We will mention here only a few of them. For instance, Khademi and Barz introduced a novel method to measure zeta potential of micelles from the permittivity data. Huang et al demonstrated a novel cell-rotation mechanism in a microfluidic chip using planar electrode design.

In recent years, miniaturization has taken a key role in revolutionizing the separation platform, and nanofluidics is gradually attracting the attention of researchers. Pennathur investigates the role of confinement on hybridization dynamics of DNA by capillary electrophoresis measurements on DNA oligomers within micro- and nanochannels. Darvish et al. presented a nanoscale Coulter counter sensor to detect the maturity as well as infectivity level of an HIV virus. A numerical investigation of the different electric current transition regimes observed during the concentration polarization phenomena in nanochannels is presented by Diez.

We would like to thank all authors for their high-quality works and reviewers for their significant time and efforts to provide constructive criticisms. Finally, we would like to express our greatest appreciation to the outgoing journal Editor in Chief Prof. Ziad El Rassi for inviting us to edit this special issue and providing necessary logistical supports for successful publication of this issue.

The special issue on Fundamentals will continue in coming years. Potential authors are kindly invited and encouraged to visit the journal website for the call.

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