

Foreword by Guest Editor

Analytical chemistry is one of the oldest and most traditional branches of chemistry. There are many mainstay techniques for chemical analysis, such as chromatography and various forms of spectroscopy, that chemists have learned to rely on for routine and for detailed molecular analysis. As well-established as many of these approaches are, it is still true that the analytical community continues to improve existing techniques and to develop new ones. This trend is driven in part by advances in other areas such as laser technology and mass spectrometry. It is also driven by advances in other branches of chemistry that require more sophisticated, more sensitive, or higher-resolution analysis. It is the purpose of this issue to present some of the newer analytical techniques. While it is impossible to touch on every innovative technique, we have chosen to highlight a number of areas that will give the reader a taste of the new developments that characterize modern analytical chemistry. These include examples in which laser spectroscopy is combined with mass spectrometry, creating an entirely new kind of hybrid instrument. The hybridization of techniques is achieved not by sequential application but by a true combination. Another contribution underscores the great strides made in mass spectrometry by demonstrating applications of Fourier transform ion cyclotron mass spectrometry. The enormous impact of laser spectroscopy on modern analytical methods can be seen in the novel approach of cavity ring-down spectroscopy, as well as in the use of laser-based chemical analysis in combination with optical spectroscopy. Microscopy itself has been revolutionized by new techniques, as showcased by the paper on near-field optical microscopy. While not pretending to provide an exhaustive view of the entire field, this issue of the *Israel Journal of Chemistry* certainly allows a peek at the state of the art in analytical chemistry.

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