



Editorial - Sensitivity of Analytical and Bioanalytical Techniques

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Editorial

Analytical science can be regarded as a disciplinary of identification and measurement. Advances in the field of analytical science propel the development of various analytical and bioanalytical techniques. These techniques enable the investigation of basic phenomena and allow one to answer the questions in a wide range of important areas ranging from medicine to material science; from environment systems to life sciences; from biology to nanotechnology.

Among the most basic criterion of an analytical or bioanalytical technique, one important factor is its sensitivity. This factor is becoming increasingly important in either quantifying ultra-low concentration substances or in elucidating the accurate chemical structures. The need for developing more sensitive techniques and searching for pathways to improve was noted in some of the important discussions.

In one particular discussion of Wang [1], it was stated that the conventional high performance liquid chromatography (HPLC) has sensitivity limitation in metabolomics analyses; the dramatic improvement of LC analyses can be achieved by further refining LC to more advanced ultra-performance liquid chromatography (UPLC), which enables columns packed with particles smaller than 2 μm and benefits higher resolution, faster speed and increased sensitivity.

Another typical discussion was on the elucidation of the chemical structures of nanoparticles by the state-of-art mass spectrometry techniques [2-4]. It was stated that the application of matrix-assisted laser desorption/ionization time-of-flight mass spectrometry exhibits lower sensitivity with increasing mass; the sensitivity of the electrospray ionization quadrupole time-of-flight tandem mass spectrometry is much improved, but is still limited to capture the larger ions in high mass range.

To this end, the development of new techniques with improved sensitivity is essential to progress the field of analytical science. Equally important, a careful investigation on the certain factors that limits the sensitivity of a given analytical technique with a view of overcoming these limitations is also necessary. Although any one particular improvement may only have trivial influences, a series of such advances may lead to a substantial cumulative effect.

The Journal of Analytical and Bioanalytical Techniques provides the coverage of all the major analytical and bioanalytical techniques and their applications in the most important areas of pharmaceutical, material, environmental and life sciences. The journal welcomes high-quality articles containing original research and review articles of exceptional merit, assisting the readers of this journal get a better understanding of the wonder field of analytical science.

References

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