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EDITORIAL

More than methods, we need Analytical Chemistry to solve problems

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Most students first learn the classical definition of Analytical Chemistry during undergraduate studies. It is defined as the science of obtaining, processing, analyzing, and communicating information about the composition of a sample. While technically correct, this definition overlooks the broader motivations and context that drive the necessity of understanding the composition of the sample analyzed.

The initial stage of any research involves clearly defining the problem to be investigated, its scientific relevance, and its potential contribution to society. It is essential to recognize that the identification and quantification of the components of a sample are always part of a broader framework.

Over time, various methods have been proposed for conducting a specific analysis, with some appearing flawless based on the conclusions presented in research papers. However, when attempting to apply these methods to solve a particular problem, these methods often fail due to a variety of reasons. The method may be unreproducible or impractical under real-world experimental conditions, such as variable temperature, relative humidity, sample preparation, or elemental composition. When the development of a method disregards critical aspects of its intended application, the analytical problem may remain unresolved.

The true contribution of Analytical Chemistry lies not only in proposing new methods but also in offering realistic solutions to chemical problems. This includes discussing the advantages and limitations of methods while ensuring they provide tangible benefits or valuable information to society. Furthermore, the evolution of Analytical Chemistry has introduced new challenges that extend its scope. Beyond solving the initially formulated problem with methods that are simple, inexpensive, and rapid, modern Analytical Chemistry must also consider sustainability, environmental impact, toxicity, and the reduction of chemical waste.

In this edition, the BrJAC presents important discussions regarding the role of Analytical Chemistry in metabolomics research and reflects on how the chemical industry can respond to climate change, promoting new consumption habits and environmental awareness. It also features an interview with Prof. Dr. Jiří Dědina, from the Institute of Analytical Chemistry of the Czech Academy of Sciences – Czech Republic. Additionally, the articles in this edition offer contributions in the medical, biological, environmental, and forensic fields, reaffirming the importance of Analytical Chemistry in addressing contemporary societal challenges.

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