

Innovations in environmental analytical chemistry: the quest for pollutants at trace levels

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Technological innovations in the field of analytical chemistry have contributed significantly to the potential to find, identify and quantify unknown compounds present in the environment. The application of accurate mass spectrometric techniques (e.g. time-of-flight, Orbitrap, FTMS) in environmental analysis has shown to facilitate the identification of toxicants, such as done in, e.g., Effect-Directed Analysis. Once the identity of (emerging) pollutants has been established, target analytical methods for monitoring these compounds at trace levels in the environment need to be developed. As an example, for various compound classes the coming of age of LC-MS in the last decades as a robust and reliable analytical technique for quantitative analysis has greatly contributed to knowledge on the occurrence and fate of pollutants in the environment. In combination with advanced (automated) sample preparation techniques and state-of-the-art detection including but not limited to mass spectrometry, analytical methods for the quantitative determination of target analytes have become more sensitive tools to assess environmental quality. To unravel the complexity of the environmental contamination both in terms of identity and quantity, the use of comprehensive coupled separation techniques may be a useful tool in specific cases. Analytical techniques such as 2D GC (GCxGC) and 2D LC (LCxLC) may be applied for target analysis of complex mixtures of contaminants, possibly containing isomers or series of molecular homologues. Other applications could be in the field of Effect-Directed Analysis, metabolomics, and others. In this session, we warmly welcome contributions dealing with chemical analysis i) of very novel, emerging compounds, ii) using novel sample preparation, separation and/or detection approaches, iii) using comprehensive separation techniques such as GCxGC or LCxLC for both target and non-target environmental pollutants.

SESSION TYPE: Platform and Poster