

12th annual LC/MS/MS workshop on environmental applications and food safety, 5–6 July 2016, Barcelona, Spain

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Aims and topics

Following the success of the previous 11 international workshops on liquid chromatography–tandem mass spectrometry in environmental analysis and food safety (Barcelona 2005, Barcelona 2006, Guelph, Ontario 2007, Barcelona 2008, Toronto 2009, Barcelona 2010, Buffalo 2011, Barcelona 2012, Toronto 2013, Barcelona 2014, Burlington, 2015), the 12th international workshop was jointly organized by CSIC – Consejo Superior de Investigaciones Científicas (Barcelona, Spain), ICRA – Catalan Institute for Water Studies, and the Institut d'Estudis Catalans (Barcelona, Spain) in collaboration with the Spanish Society for Mass Spectrometry (SEEM) (Fig. 1).

The main objective of the workshop was to evaluate practical aspects of the usefulness of tandem mass spectrometric techniques for screening and quantitation of organic contaminants in environmental and food samples.

The following practical aspects and state of the art applications were discussed:

- Advantages, comparison, and complementarities of advanced tandem and hybrid MS instruments, such as QqLIT, QqTOF, and Orbitrap, in the quantitative and

qualitative determination of complex environmental and food samples

- Advanced sample preparation technologies for food and environmental analysis including on-line pre-column technology coupled to LC/tandem MS
- Large number of applications in environmental analysis, basically water and soil/sediment, biota and food, like fruits and vegetables, juices, and meat
- Broad range of contaminants and their degradates
- Analysis and assessment of risks associated with emerging contaminants, such as nanomaterials (organic and inorganic), perfluoroalkylated substances, personal care products, and pharmaceuticals used in human and veterinary medicine including hormones, among others.

Scientific program

The 2-day program featured a mixed format, with keynote lectures from invited speakers, leaders in the field, along with shorter oral and poster presentations from workshop participants with special consideration for young researchers. In total, 34 oral presentations and 36 posters were presented within four sections:

- 1) Advanced methodologies and novel strategies in environmental analysis
- 2) Advanced methodologies for food analysis, analysis of biological samples, and biota
- 3) High-resolution MS for non-target analysis of environmental samples. Integrated target and non-target strategies
- 4) Novel applications in environmental analysis and food safety

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Fig. 1 The conference venue at the Institute of Catalan Studies (Institut d'Estudis Catalans, Barcelona, Spain)



The event was sponsored by four major LC–MS instrument providers: Waters Corporation as gold sponsor, Thermo Scientific and SCIEX as silver sponsors, and Agilent Technologies as bronze sponsor.

Workshop highlights

The workshop provided a glimpse of the current trends in the analysis of emerging contaminants in environmental and food samples, showing that the application of advanced tandem and hybrid LC–MS instruments in environmental analysis and food safety is crucial for comprehensive risk assessment. Impressive improvements in mass spectrometric instrumentation (sources and analyzers) and chromatographic systems, as well as sample preparation techniques, have allowed the determination of a broader range of compounds in environmental and food samples and thus led to the detection of many harmful compounds at the levels at which they have a biological effect. Currently one of the great challenges in food safety and envi-

ronmental analysis is the assessment of risks associated with emerging contaminants, such as nanomaterials (organic and inorganic), perfluoroalkylated substances, personal care products, and pharmaceuticals used in human and veterinary medicine including hormones, among others. The notable trend presented at the workshops is a shift from parent compound analysis to non-target analysis using high-resolution MS and analysis of metabolites and transformation products. It is becoming evident that more research is needed to determine the breakdown pathways and to evaluate the fate of transformation products formed by biotic and abiotic processes.

Next workshops

The 13th workshop will be held on 11–12 June 2017 in Buffalo, NY, USA, and organized by Diana S. Aga, Department of Chemistry of the University at Buffalo, NY, USA, while the 14th edition will be held again in Barcelona in July 2018.