XV Reunión Científica de la SECyTA y VII Reunión Nacional de la SEEM

Ambient Ionization with Plasmas and Charged Droplets

Facundo M. Fernández. School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta

This plenary presentation was a review of the different ambient ionization techniques employed in mass spectrometry. Desorption Electrospray Ionization (DESI), a relatively new technique developed in 2004 consists on an atmospheric pressure ion source that ionizes gases, liquids or solids in open air. Nowadays there are other direct analysis sources investigated in parallel by other groups, like the Direct Analysis in Real Time (DART). DESI, DART among other ambient MS techniques opened new fields of research, as Dr. Fernández explained, carrying out faster analysis.

Dr. Fernandez highlighted the advantages of ambient ionization approaches in applications such as biological tissue imaging, metabolic fingerprinting (for example in ovarian cancer research) or the detection of fake medicines among others. An example of that were counterfeit medicines, as antimalaric pills, contaminated with different adulterants in order to obtain the same physical properties (as color). The addition of wrong (or no active ingredients) or even with different active substance is illegal and can be harmful to human's health. His group is working hard in this field, detecting suspect samples by ambient ionization techniques in a fast way.

He also talk about surface mapping of materials by robotic surface mass spectrometry, which was developed by them and also talked about the development of ion mobility instrumentation for poor quality drug detection.

Analytical Developments and Biomedical Applications of Capillary Electrophoresis in Non-targeted Metabolomics

Coral Barbas. CEMBIO, *Centre for Metabolomics and Bioanalysis*, Universidad San Pablo CEU, Madrid

Prof. Coral Barbas made an excellent overview of their work in the metabolomics field at CEMBIO (*Centre for Metabolomics and Bioanalysis)*. Metabolomics, and more specifically, non-targeted metabolomics consists of the analysis of as much small molecules as possible in a specific sample. These samples could be related to diseases, nutritional challenges, metabolic alterations caused by drugs or even food control.

She talked about the general process that they employ in their group, and also about the importance of using different separation techniques (Liquid chromatography, gas chromatography or capillary electrophoresis) in order to obtain as much different information as possible about the sample also obtaining related compounds by different techniques, providing more robustness to the methodologies.

Finally, she introduced some works developed by them, which indicated as influential metabolomics approaches are being in medical fields, with the potential of the recent advances in instrumentation together with chemometric developments.

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