

Report on the 8th International Conference on Instrumental Methods of Analysis: Modern Trends and Applications (IMA), 15-19 Sept 2013, Thessaloniki, Greece

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The 8th International Conference on Instrumental Methods of Analysis: Modern Trends and Applications (IMA), was held in Thessaloniki, Greece, on September 15-19, 2013 [1].

After fourteen years since the first conference of the series, Northern Greece was selected once again to host this year's IMA conference. The previous conferences were held in Chalkidiki (1999), Ioannina (2001), Thessaloniki (2003), Iraklion (2005), Patras (2007), Athens (2009) and Chania (2011) [2,3].

Thessaloniki is the second-largest city in Greece and the capital of the geographic region of Macedonia, the administrative region of Central Macedonia and the Decentralized Administration of Macedonia and Thrace. In this beautiful city, two hundred and forty participants from many countries all over the world (Greece, Poland, Turkey, Russia, Spain, Russia, Cyprus, USA, Israel, France, Germany, Austria, Belgium, Bulgaria, UK, Italy, Serbia, Switzerland, Czech Republic, Slovak Republic, Japan and Thailand) gathered together to share their research results and discuss the new trends and applications in the field of Chemical Analysis.

Due to the great interest of scientific community, the 8th IMA conference was dedicated to the research on Mass Spectrometry (MS). During the first conference day, four sessions focused on research and development related with chemical analysis, by using MS as detection technique. Obviously the hyphenation of MS with analytical techniques as Gas Chromatography (GC-MS), High Performance Liquid Chromatography (HPLC-MS), Inductively Coupled Plasma (ICP-MS), etc, has opened new fields in chemical analysis. These techniques gave solutions to face difficult problems, which arise in the analysis of various materials including food, environmental micro-pollutants, issues of toxicological interest and others.

During the conference sessions various applications were described either orally or as poster presentations.

Among the highlights of the presentations were those of general topics on Mass Spectrometry, such as the analysis of DNA and other biomarkers, the transitioning from nanoLC-MS to DMS-MS, the field of Metabonomics as a new frontier in analytical sciences, the field of targeted proteomics, the promise of ICP-MS, the NMR methodology developments for the analysis of complex metabolite mixtures, which were presented by experts in their field.

Analyte oriented presentations included several analytical methods applied to all kind of matrices. Food commodities, environmental and archaeological samples, biological fluids and pharmaceuticals were the main fields of applications presented in the conference.

Among the presentations, the participants had the chance to hear about the simultaneous determination of 85 psychotropic and illicit drugs in human urine by hybrid solid phase extraction-protein precipitation technique (Hybrid SPE-PPT) tailored to Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS), the GC-MS analysis of blood for the metabonomic investigation of the effect of

physical exercise and allopurinol administration in rats, the analysis of genotoxic impurities in meropenem active pharmaceutical ingredient via LC-MS/MS, the application of microwave irradiation for isolation of benzodiazepines from human hair, followed by LC-MS-TOF determination, the microwave-assisted extraction of benzodiazepines from human serum, followed by LC-MS-TOF determination, the determination of metabolites of cypermethrin in urine of exposed rabbits using gas chromatography-mass spectrometry, the development of a fast GC/MS method for the detection of 41 pharmaceuticals and illicit drugs in blood following alkaline extraction, the MALDI Imaging Mass Spectrometry of colon adenocarcinoma formalin fixed paraffin-embedded tissues, a novel derivatization method for the detection of exogenous anabolic androgenic steroids at low ng/mL concentration levels using LC-MS, a method for the GC-MS determination of nicotine and cotinine in urine, a study of the effect of passive smoking, the screening and determination of some natural and synthetic drugs using chromatographic methods, a new analytical method based on microwave assisted extraction of drugs in human hair and serum, a gaseous ethanol imaging system for real-time alcohol analysis using emission of human breath and body, a selective ion-pairing assisted extraction and ¹H-NMR determination of biogenic amines in various matrices, the determination of Pt in biological matrices after anticancer treatment by Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES), electrothermal atomic absorption spectrometry (ET-AAS) and GC-MS, the development and validation of a sensitive and reliable HPLC-UV method for the determination of busulfan in human plasma to be used for dose individualization, the quantification of 25-hydroxyvitamin D₃/D₂ in plasma by UHPLC with online, SPE and large volume (500 µL) injection, the development and validation of an HPLC method for the simultaneous, determination of four vitamin D metabolites in blood serum, a method of neutron activation to measure amount of inorganic, nanoparticles in biological samples, the confirmation of anabolic steroids and metabolites in sub-ng/mL concentrations after LC-clean up, the multi-analyte detection of biomolecules in real-time and label-free mode using monolithically integrated Mach-Zehnder interferometers, and others.

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During the closing session, on the last day of the conference the participants agreed to meet again and take part to the next IMA conference in 2015, which will be held in the beautiful city of Kalamata in Peloponnese [4].

References

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