Plasma spectrochemistry

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The 14th European Winter Conference on Plasma Spectrochemistry was held in Zaragoza (Spain), from January 30 to February 4, 2011. The purpose of this conference, which was started 31 years ago by Ramon Barnes, has always been to provide the optimum forum to promote the exchange of state-of-the-art knowledge in the main areas of analytical plasma spectrochemistry.

One of the main challenges of this conference is to accommodate new concepts and applications, while still keeping sufficient time to discuss the fundamentals of plasma spectrochemistry. The program was conceived to keep this delicate equilibrium, as there is still need to further understand the basis of analytical plasmas, and of all the devices and techniques that are nowadays coupled to them, but there are also some trends that must be properly addressed.

Thus, there were several sections devoted to fundamentals, where new instrumental designs were presented together with state-of-the-art basic knowledge that is often only achieved by means of modeling. Also, specific sessions were devoted to other emerging fields. Evidently, nanoscience is one of these. This topic is clearly increasing in importance, even though this increase is not as strong in atomic spectrometry as it proves to

be in other scientific fields. There may be various reasons for this, and obviously elemental techniques are not very well suited for characterization of some types of nanomaterial (e.g., carbon nanotubes), but there is still a need to develop elemental and isotopic tools for characterization of nanoparticles, and the impurities they contain, in many areas (e.g., environmental, toxicological or industrial), as demonstrated by the examples discussed during the conference.

In this regard, it should be mentioned that one of the highlights of the conference, announcement of the Plasma Award sponsored by Agilent Technologies, was held during the opening session. The prestigious award was shared by Alfredo Sanz-Medel, from the University of Oviedo (Spain), and Frank Vanhaecke, from Ghent University (Belgium). In the accompanying keynote lectures, Alfredo Sanz-Medel precisely addressed the emerging importance of nanoscience and the role that plasma spectrochemistry can play in this area. Frank Vanhaecke, on the other hand, focused on two more traditional but still very important fields, isotopic analysis and laser ablation. Even though there were specific sessions devoted to these particular fields, it is obvious that boundaries are very subtle nowadays, as laser ablation (and solid sampling in general) methodologies are actually implemented in all kinds of application, including imaging and metallomics, the latter clearly being one of the major topics in plasma spectrochemistry currently, together with “classic” speciation. The same is true for isotopic analysis, which is no longer restricted to use in geochemical applications, having entered the biomedical field with clear success.

There was also special emphasis on addressing the needs of control laboratories, including a workshop that focused on improvements of recent commercially available instrumentation and on the potential effect of new legislation on real-life laboratories. Finally, as a way to help the youngest participants

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to learn the fundamentals, and to favor lively scientific discussion, four different short courses were also included in the program. These courses were free for all participants and were given by the most prominent scientists in every field. The course on plasma fundamentals was led by Sam Houk (Iowa State University), Detlef Günther (ETH Zürich) discussed the topic of laser ablation, Frank Vanhaecke (Ghent University) explained the basis and applications of isotopic analysis, and Joanna Szpunar (Université de Pau et des Pays de l'Adour) introduced metallomics.

Overall, 560 scientist from 37 countries attended the conference, and 24 invited speakers presented their most recent work. The list of invited lecturers comprised Carlos Alejaldre, Gary Hieftje, Annemie Bogaerst, Martin Hassellöv, J. Sabine Becker, Thomas Lippert, Rick Russo, Norbert Jakubowski, Ulrich Borchers, Franz Ulberth, R. Kenneth Marcus, Tamara Gusarova, Barry Sharp, Francis Albarede, Ralph E. Sturgeon, Jurian Hoogewerff, Mark Rehkämper, Rebeca Santamaria-Fernández, David E. Salt, María Montes-Bayón, Joseph A. Caruso, Andreas Prange, Naoki Furuta, and Charlotte Gabel-Jensen. In addition, 78 oral contributions were presented, and more than 300 posters were displayed.

Four prizes, sponsored by *Analytical and Bioanalytical Chemistry* (3) and *Journal of Analytical Atomic Spectrometry* (1) were awarded to the posters selected as best by the members of a jury. The authors finally honored with the ABC award were: Agata Mendys (Jagiellonian University, Cracow), Esperanza García-Ruiz (University of Zaragoza), Matthias Ziehe (Humboldt-Universität zu Berlin), and Hidekazu Miyahara (Tokyo Institute of Technology, Earth and Planetary Sciences). In addition, the Richard Payling Prize, given to the best contribution on the topic of glow discharge spectrochemistry and sponsored by Horiba Jobin-Yvon, Spectrums Analytik GmbH, Tofwerk AG, Leco Inc., ThermoFischer and Nu Instruments, was awarded to Rebeca Valledor (University of Oviedo).

The modern venue of the meeting—the Congress and Convention Center of the “World Trade Center of Zaragoza” (WTCZ)—and the numerous enjoyable social events held during it (Sunday evening Welcome Reception, Hot Plasma Party held at San Valero Winery on Monday evening, the various trips organized on Wednesday, and the conference dinner in the restaurant El Cachirulo) complemented the symposium very well.

The current special issue contains a good selection of contributions on plasma spectrochemistry presented during

the conference, and the major topics discussed above (metallomics, speciation, laser ablation and solid sampling, isotopic analysis, and nanoscience) are all well-represented. The reader is encouraged to discover the very latest developments in this exciting field, at least until the next European Winter Conference on Plasma Spectrochemistry—to be held in Cracow in 2013 and chaired by Joanna Szpunar (Université de Pau et des Pays de l'Adour) and Pawel Koscielniak (Jagiellonian University in Cracow)—takes place. There is no need, however, to wait that long to discuss this topic with other members of the community, as the American edition of the Winter Conference on Plasma Spectrochemistry will be held in a few months time in Tucson (January 9–14, 2012), organized, as usual, by Ramon Barnes.

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Martín Resano is professor at the University of Zaragoza and leads the MARTE research group, devoted to investigation of the basic capabilities and limitations of solid sampling—atomic spectrometry techniques (mainly high-resolution-continuum source atomic absorption spectrometry and laser ablation or electro-thermal vaporization coupled with inductively coupled plasma mass spectrometry) for bulk and spatially resolved trace analysis, speciation studies, and

isotopic analysis. M. Resano has authored more than 60 papers on this topic.