Preface fourth international conference on laser induced plasma spectroscopy and applications (LIBS 2006)

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Publisher's version / Version de l'éditeur:
https://doi.org/10.1016/j.sab.2007.11.001
Spectrochimica Acta B, 62, 12, pp. 1285-1286, 2007-12-01

ELSEVIER

Spectrochimica Acta Part B 62 (2007) 1285 – 1286

SPECTROCHIMICA ACTA PART B

www.elsevier.com/locate/sab

Preface

Fourth International Conference on Laser Induced Plasma Spectroscopy and Applications (LIBS 2006)

The fourth international LIBS conference on laser-induced breakdown spectroscopy, LIBS 2006, was held in Montreal, Canada September 4–8, 2006. It was organized by the National Research Council of Canada's Industrial Materials Institute in collaboration with the Quebec Materials Network. Held near the historic Centre-Ville district of cosmopolitan Montreal, it attracted over 192 papers *(126 posters, 11 invited speakers, 40 oral presentations, one panel discussion on standardization, 15 presentations in the LIBS Workshop devoted to security applications)* and 220 attendees from 24 countries representing the five continents. This was the fourth in this series of international conferences. Previous conferences were held in Pisa (2000), Italy, Orlando (2002), Florida, and Malaga (2004), Spain. Interspersed were the EMSLIBS conferences, regional meetings in the Euro-Mediterranean area. Montreal, with its international flavor, served as an ideal setting for this conference.

The LIBS workshop for security applications was held on 6 September. More than 60 participants attended the workshop and listened to 15 presentations. The presentations covered the application of optical technologies, including LIBS and other alternative techniques, to the detection of energetic materials and bio-aerosols.

Three short courses were offered during the morning of 6 September. The short courses gave an overview of the basics of LIBS (laser-matter interaction, plasma formation, detection of atomic emission) (given by Nicoló Omenetto, University of Florida), the instrumentation (laser sources, spectrometers, detectors) (given by Mohamad Sabsabi, NRC, Canada) and its current applications (given by Reinhard Noll, FILT, Germany). These courses were very popular and were attended by more than 100 participants from industry, academia, first-users or students. The participants of the short courses received lecture notes including copies of the presentations and additional explanations.

0584-8547/$ - see front matter
doi:10.1016/j.sab.2007.11.001

The program of the conference was composed of 11 oral sessions, covering most LIBS areas based on recent literature published in the field, and two poster sessions. It also included a forward-looking panel discussion, chaired by Leon Radziemski, to discuss what was needed to make LIBS more accessible and useful in the future. The panelists mentioned the need for workhorse reliable lasers, particularly for double pulses, and stressed the importance of focusing on key applications especially suited for LIBS; modeling for analytical use and comparing predictive results with actual spectra; validation for specific applications; being careful to avoid chasing the latest and greatest changes, but staying current on developments in other communities such as those of laser ablation for ICP-MS and the COLA group; and finally complementing current techniques and making bridges to new instrumentation.

Furthermore, a session for LIBS standardization was included in the program. A LIBS standardization committee of nine laboratories, led by M. Sabsabi, has been working since 2002 on determining normal and standard LIBS conditions for classes of samples. The goal is to establish standards within the community and then propose them to accrediting agencies such as the International Union of Pure and Applied Chemistry. At LIBS 2006, results of the third round of this effort on the analysis of aluminum alloy samples were reported. There were a surprising number of differences in procedural details among the reporting laboratories, nevertheless promising agreements were obtained. The results obtained for the studied elements in the unknown samples were in good agreement with the values given by conventional techniques. Encouraged by the results, it was decided that the objective of the next round would be steel analysis and the results will be presented at LIBS 2008 conference.

In summary, several novel aspects of this meeting immediately became apparent. First, there were a large number of newcomers to the LIBS community who were learning how this technology could be used in their application. There were many more small companies with focused applications at this meeting. The pre-conference short courses were very popular, with more than 100 participants listening to experienced LIBS users. The second notable theme was the emergence of strong new areas of application, lead by the efforts to employ LIBS over long distances, typically with femtosecond lasers, or in combination with Raman techniques. These two aspects gave this conference freshness and confirmed the notion that LIBS is still a developing technology with many potential uses remaining to be explored.

A high-point of the social program was the conference dinner on the Saint Lawrence Seaway in Montreal. The attendees enjoyed the presence of the full moon and its reflexion on the river as well as the entertainment of a magician. During that dinner, awards were made to the best student posters. This exercise aims to encourage young students engaging in LIBS research and to simulate a culture of awareness toward the quality of the works presented at the LIBS conferences. The Andor prize was given to Anna Michel (Woods Hole Oceanographic Institution USA). She will become a member of the international advisory committee and be the student representative for a period of 2 years (2008–2010). The Elsevier prize was given to Prasoon Diwakar (University of Florida), USA; the Wiley prize was given to Danny Brouard and Jean-François L. Gravel, (Université Laval), Canada; the LIBS conference prize was given to Mark Taschuk (University of Alberta), Canada. The venue of the next LIBS conference was announced during the dinner. The LIBS2008 conference will be held in Berlin, Germany, 22–25 September 2008 and will be hosted by BAM, Ulrich Panne.

More information on the conference is available at http://www.LIBS2006.com and a detailed report on the conference has been written by Leon Radziemski (see Applied Spectroscopy Vol 60, No 12, (2006), 315A–317A.

The focus on new technologies, the attendance of many first timers, and the papers on new developments, all made this an interesting and stimulating event. We would like to thank all the sponsors, institutions and individuals, including the members of organizing committee, the international scientific committee and the students who worked so hard to bring together the necessary conditions for a successful conference. We would like also to thank all the authors and the reviewers for their contributions to the special issue of SAB devoted to the conference. We are indebted to Professor Nicoló Omenetto for his valuable help for the preparation of this special issue.

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