Colloquium Spectroscopicum Internationale XXXIX

BOOK OF ABSTRACTS

CSI 2015 XXXIX

30 Aug – 3 Sept, Figueira da Foz, Portugal

http://csi2015.fis.uc.pt

Welcome

Colloquium Spectroscopicum Internationale XXXIX is a conference series which is held every two years in a different country. The first one happened in Strasbourg, France, 1950, and the former one in Tromsø, Norway, 2013.

This symposium endeavors to congregate physicists and chemists from universities and research institutions with industry analysts in all fields of analytical spectroscopy, centering the discussion not only on the results of basic research and method development but also on the outcome from daily practice in the field of optical spectroscopy.The Local Organizing Committee of the Colloquium Spectroscopicum Internationale XXXIX (CSI 2015) is pleased to welcome all participants in Figueira da Foz, Portugal.

CSI2015 will be held in "CAE - Centro de Artes e Espectáculos", Figueira da Foz, a modern Conference Hall with pleasant ample space, including an inner garden with glazed roof.

About 280 delegates from 36 countries will have the opportunity to exchange ideas and knowledge related to all fields of analytical spectroscopy, centering the discussion not only on the results of basic research and method development but also on the outcome from daily practice in the field of optical spectroscopy.

The conference programme will consist of 14 plenary lectures and 11 keynote lectures from distinguished scientists, 82 oral presentations and 204 poster contributions.

We thank our sponsors and all the people that contributed for this event to take place. We hope that you enjoy your participation in CSI 2015.

On behalf of the Local Organizing Committee,
Maria Luísa de Carvalho Joaquim M. F. dos Santos Cristina M. B. Monteiro

Conference Web-page: http://csi2015.fis.uc.pt/ E-mail: csi2015@fis.uc.pt

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Scientific Topics

A Atomic spectrometry (ICP OES, ICP-MS, GD, AAS, etc.);
B Molecular spectrometry (UV-Vis, NMR, Raman, IR, etc.);
C Organic and inorganic mass spectrometry (TIMS, MALDI, LC-MS, GC-MS);
D X-ray spectrometry (XRF, XRD, XANES, PIXE, etc.);
E Hyphenated techniques;
F Laser spectroscopy;
G Imaging techniques;
H Nuclear techniques (Mössbauer spectroscopy, Gamma spectroscopy, NAA);
I Methods of surface analysis and depth profiling;

J Application of spectroscopy in:

J1 Material sciences (nano/micro, surface and interface analysis);
J2 Environmental and geochemical analysis;
J3 Archaeometry and cultural heritage;
J4 Biological applications;
J5 Food analysis;
J6 Clinical and pharmaceutical analysis;
J7 Speciation analysis/Metallomics;
J8 Mass spectrometry in post-genomics and proteomics;
J9 Miniaturisation and nanotechnology;
J10 Fuels and biofuels; Recent Scientific Developments by XRS Instrumentation

Invited Speakers

Randolf Pohl Max-Planck-Institute of Quantum Optics, Germany	**Opening Talk, Monday 09:15**
Alfredo Sanz Medel University of Oviedo, Spain	**CSI Award, Tuesday 08:45**
JJ Gomez Cadenas IFIC, CSIC & Universitat de València, Spain	**Topic H, Monday 10:35**
Patrick J. Parsons Wadsworth Center and University at Albany, USA	**Topic C, Monday 14:30**
Gary Hieftje Indiana University, USA	**Topic B, Tuesday 09:30**
György Tarczay Eötvös University, Hungary	**Topic B, Tuesday 10:35**
Luo Liqiang National Research Center of Geoanalysis, China	**Topic D, Tuesday 14:30**
Koen Janssens AXES Research Group, University of Antwerp, Belgium	**Topic J3, Wednesday 08:45**
Jose M. Costa-Fernandez University of Oviedo, Spain	**Topic J9, Wednesday 09:30**
Patricia Smichowski Comisión Nacional de Energía Atómica, Argentina	**Topic J2, Wednesday 10:35**
Zezzi Arruda GEPAM and University of Campinas, Brazil	**Topic J7, Thursday 08:45**
Emilia Bramanti C.N.R Institute of Chemistry of Organometallic Compounds, Italy	**Topic E, Thursday 09:30**
Barbara Wagner University of Warsaw, Poland	**Topic J3, Thursday 10:35**
Iryna Doroshenko Taras Shevchenko National University of Kyiv, Ukraine	**Topic B, Thursday 14:00**

Keynote Speakers

Margaretha De Loos Vollebregt Ghent University, Belgium	**Topic A, Monday 11:25**
René Van Grieken University of Antwerp, Belgium	**Topic J3, Monday 11:25**
Yngvar Thomassen National Institute of Occupational Health, Norway	**Topic J2, Monday 11:25**
Jun Kawai Kyoto University, Japan	**Topic D, Monday 11:25**
Alessandro D'Ulivo Institute of Chemistry of Organometallic Compound, Italy	**Topic A, Tuesday 11:25**
Robert McCrindle Tshwane University of Technology, South Africa	**Topic J2, Tuesday 11:25**
Ryszard Łobiński National Research Council of France, France	**Topic B, Tuesday 11:25**
Ewa Bulska University of Warsaw, Poland	**Topic J4, Tuesday 11:25**
Jiri Dědina Institute of Analytical Chemistry of the ASCR, Czech Republic	**Topic A, Thursday 11:15**
Bernhard Welz Universidade Federal de Santa Catarina, Brazil	**Topic C, Thursday 11:15**
Alexander A. Kamnev Russian Academy of Sciences, Russia	**Topic H, Thursday 11:15**

Proceedings of the CSI 2015

The Proceedings will be published, following peer review, in the **Spectrochimica Acta B** and in the **Spectrochimica Acta A** Journals.

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Effect of the use of copper compounds on plants for the control of bacterial diseases

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Copper is an essential plant micronutrient involved in numerous biochemical functions. However, above optimal concentrations copper can act as a toxin, causing nutrient loss and oxidative stress. At cellular level, toxicity may result from the binding to sulfhydryl groups of proteins, thereby inhibiting the enzyme activity or protein functions or inducing the deficiency of other essential elements.[1]
The determination of the total concentration of heavy metal is the routine method to monitor the exposure of plants to metal pollution, but there is increasing evidence that the identification, characterization and determination of the metal species, i.e. the speciation, represents a more suitable approach to investigate metals ecotoxicity.[2]

The AFTER-Cu LIFE+ project aims at demonstrating the negative impact on plants of the use of copper compounds in conventional and organic agriculture. In order to study the effect of the use of copper compounds, we performed the quantitation and speciation of copper in *Nicotiana tabacum* plants (in vitro cultivation, and in *Actinidia deliciosa* and *Olea europaea* leaves (cultivation in field), treated with copper solutions at various concentrations. For this study a) we determined the total content of copper and other elements after microwave digestion of the samples followed by flow injection – inductively coupled plasma mass spectrometry (FI-ICP-MS) analysis; b) we developed a hyphenated method for the quantitation and speciation of copper in plant samples by coupling of size-exclusion chromatography (SEC) with ICP-MS. In the latter approach it is possible to investigate the complexes of copper with compounds biosynthesized by the plants exposed to metal stress (e.g. phytochelatins, metal binding proteins…etc.).

Acnowledgements - This work has been financially supported by the European Project Life+12 ENV/IT/336-AFTER-CU.

References

[1] De Vos, CH Ric, et al., Plant Physiology 98, 853-858 (1992).
[2] Prasad, Majeti Narasimha Vara, Heavy metal stress in plants: from biomolecules to ecosystems. Springer Science & Business Media (2004).