



16th RIO SYMPOSIUM ON ATOMIC SPECTROMETRY

Bento Gonçalves, Brazil
November 28th to 30th, 2023



SCIENTIFIC PROGRAM

Scientific Program - Schedule

November 28th, 2023			
TIME	MALBEC	PINOT CENTER	CARMÉNÈRE HALL
10:00 – 12:00 h		Short Courses 1 and 2 Meet the Editor RSC	
14:00 – 15:45 h		Workshops 1 and 2	
17:30 – 19:10 h	Opening Ceremony		
19:30 – 23:00 h			Welcome Cocktail
November 29th, 2023			
TIME	MALBEC	CARMÉNÈRE HALL	
09:00 – 10:30 h	Session 1		
10:30 – 11:00 h		Coffee-break	
11:00 – 12:05 h	Session 2		
14:00 – 15:00 h	Session 3		
15:00 – 16:30 h		Poster Session 1	
16:00 – 16:30 h		Coffee-break	
16:30 – 18:10 h	Session 4		
November 30th, 2023			
TIME	MALBEC	CARMÉNÈRE HALL	ASSEMBLAGE HALL
09:00 – 10:30 h	Session 5		
10:30 – 11:00 h		Coffee-break	
11:00 – 12:05 h	Session 6		
14:00 – 15:15 h	Session 7		
15:15 – 16:45 h		Poster Session 2	
16:00 – 16:30 h		Coffee-break	
16:45 – 18:00 h	Session 8		
18:30 – 19:10 h	Closing Conference		
19:10 – 19:40 h	Closing Ceremony		
21:00 – 23:50 h			Bottle Party

November 28th (Tuesday)

9:00 - 17:00 h

Registration
Carménère Hall

Short courses (10:00 - 12:00 h)

Short course 1: Analytical Method Validation

Room: Pinot Center

Speaker: Thiago de Oliveira Araujo (INMETRO, Brazil)

Short course 2: Advances in Sample Preparation for Atomic Spectrometry

Room: Pinot Center

Speakers: Fábio Andrei Duarte (UFES, Brazil) and Éder Lisandro de Moraes Flores (UTFPR, Brazil)

Meet the Editor: Royal Society of Chemistry

Room: Pinot Center

Chair: Elizabeth Magalhães (RSC, Brazil)

Speakers: JAAS and Analytical RSC Editors

Workshops (14:00 - 15:45 h)

Workshop 1: Atomic Spectrometry for Environmental Applications

Room: Pinot Center

Coordinator: Maria Tereza Weitzel Dias Carneiro Lima (UFES, Brazil)

14:00 - 14:05 h

Opening: Maria Tereza Weitzel Dias Carneiro Lima (UFES, Brazil)

14:05 - 14:25 h

Applications of multidimensional chromatography strategies in speciation analysis by ICP-MS

Speaker: Pablo Pacheco (Universidad Nacional de San Luis, Argentina)

14:25 - 14:45 h

New materials applied for ultratrace determination by atomic spectrometry

Speaker: Jefferson Santos de Gois (UERJ, Brazil)

14:45 - 15:05 h	Total reflection X-ray fluorescence for environmental analysis: possibilities and challenges Speaker: Clésia Cristina Nascentes (UFMG, Brazil)
15:05 - 15:25 h	Plasma-based techniques applied to airborne particulate matter characterization Speaker: Patricia Smichowski (Argentinian Atomic Energy Commission, Argentina)
15:25 - 15:45 h	Discussion
Workshop 2: Atomic Spectrometry for Food, Beverages and Biological Applications	
Room: Pinot Center Coordinator: Rochele Sogari Picoloto (UFMS, Brazil)	
14:00 - 14:05 h	Opening: Rochele Sogari Picoloto (UFMS, Brazil)
14:05 - 14:25 h	Photochemical and thermochemical vapor generation techniques for trace element analysis by AAS Speaker: Gisele Simone Lopes (UFC, Brazil)
14:25 - 14:45 h	Isotopic and elemental assessment in foods: from fortification to toxicity Speaker: Márcia Mesquita Silva da Veiga (USP, Brazil)
14:45 - 15:05 h	Trends and challenges of food and beverages analysis by LIBS Speaker: Cassiana Seimi Nomura (USP, Brazil)
15:05 - 15:45 h	Discussion

Opening Ceremony	
Room: Malbec	
17:30 - 18:00 h	<p>Opening and Welcome Érico M. M. Flores (UFMS, Brazil) <i>Chair of the 16th RSAS</i></p> <p>Tributes Honored 1: Daniel Lázaro Gallindo Borges (UFSC, Brazil) Honored 2: Francisco José Krug (CENA-USP, Brazil) Honored 3: Heidi Goenaga-Infante (LGC National Measurement Laboratory, UK) Honored 4: Jiří Dědina (Czech Academy of Sciences, Czech Republic) Honored 5: Ramon Murray Barnes (University of Massachusetts Amherst, USA)</p>
18:00 - 18:30 h	Cultural presentation
18:30 - 19:10 h	<p>Opening conference ICP-MS in the biomedical sciences: pushing the boundaries of the application range Frank Vanhaecke (Ghent University, Belgium) Sponsored by Thermo Fisher Scientific and SENS</p>
19:30 - 23:00 h	<p>Welcome cocktail Carménère Hall</p>

November 29th (Wednesday)

Session 1 (9:00 - 10:30 h)

Chair: Márcia Foster Mesko (UFPEL, Brazil)

Room: Malbec

9:00 - 9:40 h	ICP-MS based bioanalytical strategies to study nano-iron therapies using in-vivo and in-vitro models Plenary lecturer 1: Maria Montes-Bayón (University of Oviedo, Spain)
9:40 - 10:05 h	Elemental bioimaging at micro- and nanoscale Invited speaker 1: Dirk Schaumlöffel (French National Research Center, France)
10:05 - 10:30 h	Advanced solvents and nanomaterials in microextraction techniques: a gateway to sensitive trace element determination and speciation Invited speaker 2: Rodolfo Wuilloud (National University of Cuyo, Argentina)

10:30 - 11:00 h **Coffee-break**

Session 2 (11:00 - 12:05 h)

Chair: Dirk Schaumlöffel (French National Research Center, France)

Room: Malbec

11:00 - 11:10 h	Oral presentation 1: Use of micro-plasmas for metal speciation <u>Zoltan Mester</u> National Research Council Canada, Canada
11:10 - 11:20 h	Oral presentation 2: Raman spectroscopy coupled to HR-CS FMAS for sequential determination of nitrogen species in fertilizers Evilim Martinez de Oliveira, Edilene C. Ferreira, <u>José A. Gomes Neto</u> , George L. Donati, Bradley T. Jones UNESP, Brazil
11:20 - 11:30 h	Oral presentation 3: Reactivity and analytical performance of NH₃ as reaction cell gas in inductively coupled plasma tandem mass spectrometry (ICP-MS/MS) Beatriz M. Fontoura, Joaquim A. Nóbrega, George L. Donati, <u>Alex Virgilio</u> CENA-USP, Brazil

11:30 - 11:40 h	<p>Oral presentation 4: ICP-MS based platforms for tracing studies of isotopically labelled selenium nanoparticles in plants <u>Bruna Moreira Freire</u>, Ana Rua-Ibarz, Eduardo Bolea-Fernández, Flávio Venâncio Nakadi, Maite Aramendía, Bruno Lemos Batista, Martín Resano UFABC, Brazil/ University of Zaragoza, Spain</p>
11:40 - 12:05 h	<p>Challenges and advances in the analyses of oil samples by ICP-MS Invited speaker 3: Tatiana Dillenburg Saint´Pierre (PUC-Rio, Brazil) Sponsored by Perkin Elmer</p>
12:05 - 14:00 h	Lunch
<p>Session 3 (14:00 - 15:00 h) Chair: Daniel Lázaro Gallindo Borges (UFSC, Brazil) Room: Malbec</p>	
14:00 - 14:25 h	<p>Analytical approaches for PFAS sum-parameter analysis - from materials to environment Invited speaker 4: Björn Mermann (Federal Institute for Materials Research and Testing, Germany)</p>
14:30 - 14:40 h	<p>Oral presentation 5: Boron elemental and isotopic determination via HR-CS GFMS: absorption of the BF diatomic molecule André L. Marques de Souza, <u>Flávio V. Nakadi</u>, Maite Aramendía, Martín Resano University of Zaragoza, Spain</p>
14:40 - 14:50 h	<p>Oral presentation 6: Assessing the elemental composition in transgenic soybean cells using single-cell ICP-MS <u>Ana Beatriz Santos da Silva</u>, Elisânia Kelly Barbosa Fonseca, Marco Aurélio Zezzi Arruda UNESP/UNICAMP, Brazil</p>
14:50 - 15:00 h	<p>Oral presentation 7: Plasma-mediated vapor generation by dielectric barrier discharge: an arsenic study using AAS <u>Gilberto Coelho Junior</u>, Jan Kratzer, Jiří Dědina Czech Academy of Sciences, Czech Republic</p>
15:00 - 16:30 h	<p>Poster session 1 Abstracts 001 to 050 Carménère Hall</p>

16:00 - 16:30 h	Coffee-break
Session 4 (16:30 - 18:10 h)	
Chair: Marco Aurélio Zezzi Arruda (UNICAMP, Brazil)	
Room: Malbec	
16:30 - 16:55 h	On the interaction of microwave radiation with mineral acids - fundamental considerations on microwave-assisted sample digestion Invited speaker 5: Helmar Wiltshé (Graz University of Technology, Austria)
16:55 - 17:20 h	Facing new analytical challenges in atomic spectrometry via microsampling Invited speaker 6: Martín Resano (University of Zaragoza, Spain)
17:20 - 17:45 h	Analysis of solid samples using atomic and mass spectrometry: relevant or remembrance? Invited speaker 7: Daniel Lázaro Gallindo Borges (UFSC, Brazil)
17:45 - 18:10 h	Dielectric barrier discharge hydride atomizers for trace element and speciation analysis Invited speaker 8: Jan Kratzer (Czech Academy of Sciences, Czech Republic)
20:00 - 23:00 h	Atomic Dinner

November 30th (Thursday)

Session 5 (9:00 - 10:30 h)

Chair: Tatiana Dillenburg Saint´Pierre (PUC-Rio, Brazil)

Room: Malbec

9:00 - 9:40 h	Multi-technical atomic spectrometry approach to speciation of gadolinium in rat brain Plenary lecturer 2: Ryszard Lobinski (French National Research Center, France)
9:40 - 10:05 h	Laser-induced breakdown spectroscopy (LIBS): data analysis and contributions for agrobusiness Invited speaker 9: Edenir Rodrigues Pereira Filho (UFSCar, Brazil)
10:05 - 10:30 h	Expression of matrix metalloproteinases and their inhibitors in breast cancer tissues Invited speaker 10: Maria Luisa Fernández Sánchez (University of Oviedo, Spain)

10:30 - 11:00 h **Coffee-break**

Session 6 (11:00 - 12:05 h)

Chair: Rodolfo Wuilloud (National University of Cuyo, Argentina)

Room: Malbec

11:00 - 11:10 h	Oral presentation 8: Are toenails the ideal specimen to access the exposure to arsenic and other elements in epidemiological studies? Camilla Faidutti, Louise Hair, Casey Doolette, Enzo Lombi, <u>Jörg Feldmann</u> University of Graz, Austria
11:10 - 11:20 h	Oral presentation 9: A new magnetic nanomaterial as solid phase for trace elements analysis in Brazilian pre-salt produced water by ICP OES Maradona C. da Silva, Tiago M. Freire, Pierre B. A. Fechine, Gisele S. Lopes, <u>Francisco L. F. Silva</u> , Wladiana O. Matos UECE, Brazil

11:20 - 11:30 h	<p>Oral presentation 10: Direct determination of Sr isotopes in rock by LA-ICP-MC/MS Laís N. Viana, Rafael C. C. Rocha, Rafael C. M. Telles, Cleverson J. F. Oliveira, Christiane B. Duyck, <u>Tatiana D. Saint’Pierre</u>, Mauro C. Geraldés PUC-Rio, Brazil</p>
11:30 - 11:40 h	<p>Oral presentation 11: Assessment of bromine and iodine concentrations in drill cuttings and oily sludge by ICP-MS <u>Renan G. Marim</u>, Eduardo S. Chaves UFSC, Brazil</p>
11:40 - 12:05 h	<p>Alternatives of sample preparation methods for biofuels analysis Invited speaker 11: Juliana Severo Fagundes Pereira (UFRGS, Brazil) Sponsored by Anton Paar</p>
12:05 - 14:00 h	Lunch
Session 7 (14:00 - 15:15 h)	
Chair: Ralph Edward Sturgeon (National Research Council Canada, Canada) Room: Malbec	
14:00 - 14:25 h	<p>Tracing authenticity: isotope ratios in cigars, wines, and cereals Invited speaker 12: Rui Miguel Santos (Universidade do Porto, Portugal) Sponsored by Analytik Jena</p>
14:25 - 14:50 h	<p>Characterization of aged microplastics covered by biofilm using advanced laser-based techniques Invited speaker 13: Jozef Kaiser (Brno University of Technology, Czech Republic)</p>
14:50 - 15:15 h	<p>Standard dilution analysis 2.0: automation and two internal standards for fast, accurate determinations Invited speaker 14: George Luis Donati (Wake Forest University, USA)</p>
15:15 - 16:45 h	<p>Poster session 2 Abstracts 051 to 103 Carménère Hall</p>
16:00 - 16:30 h	Coffee-break

Session 8 (16:45 - 18:00 h)	
Chair: Ewa Bulska (University of Warsaw, Poland) Room: Malbec	
16:45 - 17:10 h	Inductively coupled plasma for spectrochemical analyses: what we learned from computer models Invited speaker 15: Ramon Murray Barnes (University of Massachusetts, USA)
17:10 - 17:35 h	Pushing down detection limits of atomic fluorescence spectrometry coupled to generation of volatile species Invited speaker 16: Jiří Dědina (Czech Academy of Sciences, Czech Republic)
17:35 - 18:00 h	Insights into the role of transition and noble metals mediating photochemical vapor generation Invited speaker 17: Ralph Edward Sturgeon (National Research Council Canada, Canada)
Closing Conference	
Chair: Maria Montes-Bayón (University of Oviedo, Spain) Room: Malbec	
18:30 - 19:10 h	Closing conference: A multi-technique strategy towards improved diagnosis and therapeutics of metal metabolism disorders Heidi Goenaga-Infante (LGC National Measurement Laboratory, UK)
Closing Ceremony	
Room: Malbec	
19:10 - 19:40 h	Érico M. M. Flores (UFSM, Brazil) <i>Chair of the 16th RSAS</i> Information and remarks of the 16 th RSAS Poster Awards Closing
21:00 - 23:50 h	Bottle party* Assemblage Hall *Bring a bottle of a typical drink from your country

Sponsors Technical Lectures

Diamond Sponsor technical lecture: Analytik Jena	
November 30th, 2023	
Room: Pinot Center - Room A	
15:30 - 16:00 h	High resolution inductively coupled plasma optical emission spectroscopy: technology and special applications Speaker: Júlio Cezar Paz de Mattos (Analytik Jena, Brazil)
Gold Sponsor technical lecture: Perkin Elmer	
November 27th, 2023	
Room: Pinot Center - Room A	
12:15 - 12:40 h	Updates on new technologies present in Perkin Elmer systems that contribute to analyzes focused on chemical speciation Speaker: Marcelo Anselmo Oseas da Silva (Perkin Elmer, Brazil)
Gold Sponsor technical lecture: Agilent Technologies	
November 27th, 2023	
Room: Pinot Center - Room A	
14:30 - 14:55 h	Hyphenated systems for elemental speciation: advances in HPLC and ICP-MS/MS Speaker: Bruno Menezes (Agilent Technologies, Brazil)
Gold Sponsor technical lecture: Nova Analítica	
November 29th, 2023	
Room: Pinot Center - Room A	
12:15 - 12:40 h	Total workflow approach to sample preparation for ICP analysis Speaker: Mariana Ortega Garcia (Nova Analítica, Brazil)
Gold Sponsor technical lecture: Thermo Fisher Scientific	
November 29th, 2023	
Room: Pinot Center - Room C	
15:00 - 15:25 h	Analytical technologies - boost your productivity Speaker: Felipe Rezende (Thermo Fisher, Brazil)
Sponsor technical lecture: Vert	
November 29th, 2023	
Room: Pinot Center - Room C	
12:00 - 12:25 h	Simplify digester: a reliable alternative for sample preparation aiming at elemental analysis by ICP techniques Speaker: Gabriel Gustinelli Arantes de Carvalho (Vert, Brazil)