



2024 Winter Conference on Plasma Spectrochemistry Preliminary Program

Monday, January 15, 2024

8:00 Opening and Welcome

1. Imaging Plasma Mass Spectrometry, Biodistribution Analysis, and Single Cell Analysis Spectroscopy Emerging Leader in Atomic Spectroscopy Award

08:00 PL01 Revealing the Invisible: Single-Event ICP-MS Analysis of Micro/Nano-Structures, Eduardo Bolea-Fernandez, University of Zaragoza, Department of Analytical Chemistry, Aragon Institute, Pedro Cerbuna 12, Zaragoza, Spain, ebolea@posta.unizar.es; Antonio Bazo, Kevin Breckmans, Rinus Dejonghe, Olivier De Wever, Tong Liu, Mina Nicolic, Ana Rua-Ibarz, *et al.*

09:00 IL01 TBD, Detlef Günther, ETH Zürich, Department of Chemistry, Vladimir-Prelog Weg 1, CH-8092 Zürich, Switzerland, detlef.guenther@sl.ethz.ch; Christoph Neff, Pascal Becker, Thomas Vonderach, Bodo Hattendorf

09:30 IL02 Single Cell Analysis by NanoSIMS for Subcellular Trace Metal and Nanoparticle Localization, Dirk Schaumlöffel, CNRS, Université de Pau et des Pays de l'Adour, E2S UPPA, Institut des Sciences Analytique et Physico-Chimie pour l'Environnement, UMR 5254, F-64053 Pau, France, dirk.schaumloeffel@univ-pau.fr; Maria Angels Subirana

10:00 Break

10:20 IL03 Expanding the Toolbox of Immuno-Mass Spectrometry Imaging by LA-ICP-TOFMS Towards Endogenous Elements, Sarah Theiner, Martin Schaler, Gabriel Braun, David Loibnegger, Elisabeth Foels, Gunda Köllensperger, University of Vienna, Institute of Analytical Chemistry, Faculty of Chemistry, Waehringer Str. 38, A-1090 Vienna, Austria, sarah.theiner@univie.ac.at

10:50 IL04 Elemental Bioimaging: A Cross-Fertilization Between Real-Life Applications and Fundamental Studies, Frank Vanhaecke, Ghent University, Department of Chemistry, Campus Sterre, A&MS Research Unit, Krijgslaan 281 - S12, B-9000 Ghent, Belgium, frank.vanhaecke@ugent.be; Simone Bräuer, Thibaut Van Acker, Tom Van Helden, Kristina Merviç, Johannes T. van Elteren, Martin Šála, Ivan Nemet, Sanda Rončević

11:20 IL05 Single-Cell Analysis Using ICP-qMS, Qiuquan Wang, Xiamen University, Department of Chemistry, MOE Key Lab of Spectrochemical Analysis, College of Chemistry and Chemical, Xiamen 361005, China, qqwang@xmu.edu.cn

11:50 M01 Recent Advances in Mass Cytometry, Dmitry Bandura, Standard BioTools Inc. Fluidigm Canada Inc., 1380 Rodick Rd, Unit 400, Markham ON L3R 4G5, Canada, dmitry.bandura@fluidigm.com; the R&D Team,

12:00 Break

2. Elemental Imaging

1:00 IL06 Elemental Imaging of Technologically Relevant Materials Using LA-ICP-MS and LIBS, Andreas Limbeck, TU Wien, Institute of Chemical Technologies and Analytics, Getreidmarkt 9/164, 1060 Vienna, Austria, andreas.limbeck@tuwien.ac.at; David Gibbs, Maximilian Podsednik, Jakob Willner, Ahmed Bahr, Helmut Riedl, Andreas Nennig, Juergen Fleig

1:30 IL07 Advanced Nuclear Fuel Analysis: Exploring LIBS for Rapid Elemental Imaging of Surrogate TRISO Particles, Hunter B. Andrews, Oak Ridge National Laboratory, Chemical Sciences Division, 1 Bethel Valley Rd, Oak Ridge TN 37831-6131; Benjamin T. Manard, C. Derrick Quarles Jr., Veronica C. Bradley, Peter Doyle, N. Alex Zirakparvar, Daniel R. Dunlap, *et al.*

2:00 M02 Improved Calibration Standards for Multi-Elemental Quantitative LA-ICP-ToF-MS, Kharmen Billimoria, National Measurement Laboratory, LGC, Queens Rd, Teddington TW11 0LY, United Kingdom, kharmen.billimoria@lgcgroup.com; Guillermo Rendono Fernandez, Ana Soldado, J.M. Costa-Fernandez, Stanislav Strkopytov, Heidi Goenaga-Infante

2:20 M03 High Resolution Isotope Mapping of Minerals by LA-ICPMS, George Gehrels, University of Arizona, Department of Geosciences, Gould-Simpson Bldg 531, 1040 E. 4th, Tucson AZ 85721, ggehrels@geo.arizona.edu, ggehrels@gmail.com; D. Alberts, J. Biegel, M. Pecha, S. Van Malderen, C. Stremtan

2:40 M04 Examining the Cutting Edge of LA-ICP-MS kHz Laser Ablation Coupled to TOF-ICP-MS Detection, Lukas Schlatt, Nu Instruments, 74 Clywedog Rd South, Wrexham Industrial Estate, Wrexham LL13 9XS, United Kingdom, lukas.schlatt@ametec.com; Phil Shaw

3:00 Break

3:20 IL08 Quantitative Imaging of Proteins in Human Cells by LA-ICP-MS: From Matrix-Matched Calibration Approaches to an Advanced Method Accounting for Cell Volume, Beatriz Fernandez-Garcia, University of Oviedo,



Department of Physical and Analytical Chemistry, Julian Claveira 8, 33006 Oviedo, Spain, fernandezbeatriz@uniovi.es; Paula Menero-Valdés, Alicia Villa-Vazquez, Lydia Alvarez, Hector Gonzalez-Iglesias, Rosario Pereiro

3:50 IL09 Expanding the Elemental Coverage by Combining LIBS with ICP-TOF-MS for High-Speed Imaging, C. Derrick Quarles Jr., Elemental Scientific, Inc., 7277 World Communications Dr, Omaha NE 68122, derrick.quarles@icpms.com; Benjamin Manard, Hunter Andrews, Tyler Spano, Cole Hexel, Martin Rittner

4:20 IL10 Geo-Based Applications Using Multiple Techniques, John Cottle, University of California, Santa Barbara, Department of Earth Sciences, 900 Mesa Rd, Santa Barbara CA 93106-9630, cottle@geol.ucsb.edu; P. Shaw, A.R.C. Kylander-Clark, C. O'Connor, R.W. Hutchinson, L. Schlatt

4:50 M05 Sample Preparation for Quantitative Bio-Imaging of Leaves Using LA-ICP-TOFMS, Pascal Becker, ETH Zürich, D-CHAB, Laboratory of Inorganic Chemistry, Vladimir-Perlog-Weg 1, CH-8093 Zürich, Switzerland, beckerpa@inorg.chem.ethz.ch; Thomas Nauser, Matthias Wiggenhauser, Emmanuel Fossard, Beat Aeschlimann, Detlef Günther

5:10 M06 Improving Sensitivity in sc-ICP-MS: The Use of DNA Intercalators and Membrane Markers for Enhanced Cell Detection, Paula Menero-Valdés, University of Oviedo, Department of Physical and Analytical Chemistry, Julian Claveria 8, Oviedo, Spain, meneropaula@uniovi.es; Alicia Villa-Vazquez, Lydia Alvarez, C. Derrick Quarles Jr, Hector Gonzalez-Iglesia, Beatriz Fernandez, Rosario Pereiro

Heritage Lecture

Sponsored by Burgener Research

5:30 HL01 How Helping My Father Repair and Build Spectrometers Led to ICP Advancements and Development of the Burgener Nebulizer, John Burgener, Burgener Research Inc., 160-2 Lakeshore Rd W., Mississauga, ON L5J 1J5, Canada, burgener@burgener.com

Thermo Fisher Scientific Plasma Scientist Award Forum

Tuesday, January 16, 2024

3. Elemental Speciation

08:00 TBA

08:30 TBA, Joanna Szpunar, Institute of Analytical and Physical Chemistry (IPREM), French National Research Centerl CNRS UMR 5254, 2, Av. Pierre Angot, F-64053 Pau, France, joanna.szpunari@univ-pau.fr

09:00 IL11 A Sulfur Based Isotope Dilution Workflow for the Quantification of Human Plasma Ferritin Light Chain, a Biomarker of Iron Metabolic Disorders, Heidi Goenaga Infante, LGC Limited, National Measurement Institute, Queens Rd, Teddington, Middlesex TW11 OLY, United Kingdom, heidi.goenaga-Infante@lgcgroup.com; Christin Ward-Dettrich, Sachin Nehete

09:30 IL12 The Problem of Marine Mercury from the Decommissioning of Oil and Gas Infrastructure and Mercury Detoxification in Whales to Hg/Se Nanoparticles, Jörg Feldmann, University of Graz, TELSA - Analytical Chemistry, Institute of Chemistry, Universitätsplatz 1, 8010 Graz, Austria, joerg.feldmann@uni-graz.at; Lhiam Paton, David Clases, Raquel Gonzalez de Vega, Thomas Lindsay

10:00 Break

10:20 IL13 Metabolism and Detoxification of Tellurium in Organisms Assessed by Liquid Chromatography Coupled to Elemental Mass Spectrometry, Yasumitsu Ogra, Chiba University, Laboratory of Pharamcology and Toxicology, 1-8-1 Inohana, Chuo, Chiba 260-8675, Japan, orga@chiba-u.jp; Yu-ki Tanaka, Shunske Shimazaki, Yasunori Fulumoto

10:50 IL14 Plasma -omics Methodologies for Studies of the Neurotoxicity of Metals Through the Interaction the Gut Microbiota, Tamara Garcia-Barrera, University of Huelva, Huelva, Spain, tamara@uhu.es

11:20 IL15 Species-Specific Isotope Ratio Analysis of Proteins via CE-MC-ICP-MS, Björn Meermann, Federal Institute for Materials Research and Testing (BAM), Division 1.1 - Inorganic Trace Analysis, Richard Willstätter Str. 11, D-12489 Berlin, Germany, bjoern.meermann@bam.de; Danya Tukhmetova, Jan Lisec, Jochen Vogl

11:50 IL16 Quantitative LC-ICP-MS to Probe Metal Speciation in Environmental Samples, Christian Dewey, University of Minnesota, Department of Chemistry. Smith Hall, 207 Pleasant St. SE, Minneapolis, MN 55455, cdewey@umin.edu; René M. Boiteau

12:20 Break

1:00 IL17 Reference Materials for Metal Speciation: From Computed Tomography (CT) Phantom Objects to Insect Proteins, Zoltan Mester, National Research Council Canada, 1200 Montreal Rd., Ottawa, ON K1A 0R6, Canada, zoltan.mester@nrc-cnrc.gc.ca



- 1:30 IL18 Development and Validation of a Quantitative, Multiplexed, Immuno-Mass Spectrometry Imaging Analysis of the Dystrophin-Glycoprotein Complex**, David Bishop, University of Technology Sydney, Faculty of Science, Broadway, NSW 2007, Australia, david.bishop@uts.edu.au; Monique G. de Mello, Mika T. Westerhausen, Jonathan Wanagat
- 2:00 IL19 ICP-MS Based Strategies for Biomedical Analysis**, Bin Hu, University of Wuhan, Wuhan, China, binhu@wuhan.edu.cn
- 2:30 IL20 Speciation of Arsenic and its Protein Interactions**, X. Chris Le, University of Alberta, Department of Laboratory Medicine and Pathology, Faculty of Medicine and Dentistry, Edmonton AB T6G 2G3, Canada, xc.le@ualberta.ca
- 3:00 Break**
- 3:20 IL21 Comprehensive Gas Chromatographic Analysis of Volatile Selenium Species**, Dirk Wallschläger, Laurier University, Department of Chemistry and Biochemistry, 75 University Ave W, Waterloo ON N2L 3C5, Canada, dwallschlagel@wlu.ca; Alshymaa Ali, Asal Jaberansari, Jana Farell
- 3:50 IL22 Chromium Speciation in Water Samples Using Modified Graphene Oxide and Microplasma Chemistry**, Vassili Karanassios, University of Waterloo, Waterloo Institute for Nanotechnology, Department of Chemistry, Waterloo ON N2L 3G1, Canada, vkaranassios@uwaterloo.ca; Laiba Quadeer, Daniel Cebula
- 4:20 T01 Identification of Isolated Exosomes by Selective Metal Tagging and ICP-MS Detection**, Cameron Stouffer, Clemson University, Department of Chemistry, 105 Collings St Rm 102, Clemson SC 29634, cstouff@clemson.edu; D. Cebula, U. Dayal, M.J.W. Thiessen
- 4:35 T02 Bio-Accessibility and Detoxification Assessment of Arsenite in Crickets**, Zuzana Gajdosechova, National Research Council of Canada, NRC Metrology, 1200 Montreal Road, M12, G7, Ottawa ON K1A 0R6, Canada, zuzana.gajdosechova@nrc.ca; Calvin H. Palmer, Zoltan Mester
- 4:50 T03 Ion Chromatography Coupled to Nitrogen Plasma Mass Spectrometry for Arsenic Speciation Analysis**, Shahnaz Mukta, Iowa State University, Department of Chemistry, 2415 Osborn Dr., Ames IA 50011, shahnazm@iastate.edu; Alexander Gundlach-Graham
- 5:05 T04 Gadolinium Speciation in Tissues. A General Review on the Multidisciplinary Approaches**, Izabela Strzeminska, Cécile Factor, Philippe Robert, Department of Research and Innovation, Guerbet Group, 95943 Roissy CDG, France, izabela.strzeminska@guerbet.com; Joanna Szpunar, Ryszard Lobinski, Institute of Analytical and Physical Chemistry for the Environment and Materials (IPREM-UMR 5254), CNRS, Université de Pau et des Pays de l'Adour (UPPA), E2S, F-64053 Pau, France, joanna.szpunari@univ-pau.fr

Heritage Lecture

- 5:30 HL02 CDC's Clinical ICP-MS Laboratory -- Accomplishments, Innovations, and Public Health Successes**, Robert L. Jones, Centers for Disease Control and Prevention, Inorganic and Radiation Analytical Toxicology Branch, 4770 Buford Hwy MS F-18, Atlanta GA 30341-3717, rljones208@bellsouth.net

Tue 3:00 Posters: Environmental Analysis, Imaging, Mass Cytometry

- TP01 Fast, High Resolution Bio-Imaging**, Andreas Schweikert, TOFWERK AG, Schorenstrasse 39, CH-3645 Thun, Switzerland, andreas.schweikert@tofwerk.com; Gunda Koellensperger, Sarah Theiner, Ciprian Stremtan
- TP02 GeoChron: Interactive Reduction, Imaging and Visualization Tools for Dentriral Geochronology**, Lucas D. Smith, Teledyne Photon Machines, 384 Gallatin Park Dr, Bozeman MT 59715, lucas.smith@teledyne.com; Stijn J.M. Van Malderen

Posters: Analysis of Advanced, Geochemical, Nuclear, Nano-, Petroleum, Semiconductor Materials

- TP03 Novel Sample Preparation of Clays with Analysis by ICP-MS and Unconventional Approach to Data Interpretation**, Alind Barany, Corning RDC, SP-DV-01-D1W72C, Corning NY 14831, Baranyaj@corning.com; Ela Bakowska
- TP04 Comprehensive Characterization of Soil Samples: A Reliable Method for Determining 60 Elements Using ICPMS and Microwave Digestion**, Rui Santos, Oliver Buettel, Peio Riss, Maximilian Schussler, Analytik Jena GmbH + Co, Konrad-Zuse-Str. 1, D-07745 Jena, Germany, rui.santos@analytik-jena.com
- TP05 Trace Element Analysis in Sea Water Using NexION® Series ICP-MS**, Liyan Xing, PerkinElmer, 501 Rowntree Dairy Rd, Unit #6, Woodbridge, ON L4L 8H1, Canada, liyan.xing@perkinelmer.com; Ewa Pruszkowski, Chady Stephan, Aaron Hineman
- TP06 Pushing the Limits of Nanoparticle Analysis with the NexION Series ICP-MS**, Ruth Merrifield, Perkinelmer Inc., 501 Rowntree Dairy Rd, Unit 6, Woodbridge, ON L4L 8H1, Canada, ruth.merrifield@perkinelmer.com; Aaron, Hineman, Chady Stephan



- TP07 Analysis of Petroleum Products According to ASTM Method D8110-17**, Ewa Pruszkowski, PerkinElmer Inc., 5190 Apennines Cir, San Jose CA 95138, ewa.pruszkowski@perkinelmer.com; Chady Stephen
- TP07B ICP-OES Analysis of Inorganic Contaminants in Light and Middle Catalytic Cracking Fractions**, Paul Krampitz, Agilent Technologies, 201 Hansen Ct, Suite 108, Wood Dale IL 60191, paul.krampitz@agilent.com
- TP07C Specialized Sample Preparation and Sample Introduction Accessories for In-Service Lubricant and Coolant Analysis Using ICP-OES Detection**, Fred G. Smith, Teledyne CETAC, 14306 Industrial Rd, Omaha NE 68144. fred.smith@teledyne.com
- TP07D Harmful Metals from Rubber Playground Tiles**, Lee L. Yu, National Institute of Standards and Technology, 100 Bureau Dr., Stop 8391, Gaithersburg, MD 20899-8391, lee.yu@nist.gov; Robyn Winz, Li Piin Sung, YuYe J. Tong, Dejun Chen
- Tue 3:00 Posters: New Instrumentation, Interferences**
- TP08 Role of Reaction Gases in ICP-MS**, Ewa Pruszkowski, PerkinElmer Inc., 5190 Apennines Cir, San Jose CA 95138, ewa.pruszkowski@perkinelmer.com; Chady Stephen
- TP09 Managing Doubly Charged Rare Earth Element Interferences Using ICP-MS and ICP-QQQ**, Craig Jones, Agilent Technologies, 5301 Stevens Creek Blvd, Santa Clara CA 95051-7201, craig_jones@agilent.com
- TP10 Sulfur Measurements in Soil and Plant Digests by ICP-MS: The Peak Ridge Potential of Methane as a Reaction Gas**, Sukhjeet Singh, Hill Laboratories, 28 St, Frankton, Hamilton 3240, New Zealand, sukhjeet.singh@hill-labs.co.z; Megan Grainger, Michael Mucalo
- TP11 Neural Network with Backpropagation of Error Applied to MIP-OES: Plasma Species as Neutrons to Correct Matrix Effects**, Nicholas B. Judd, Wake Forest University, Department of Chemistry, Salem Hall, Box 7486, Winston-Salem NC 27109, juddn214@wfu.edu; George L. Donati, Brad T. Jones
- TP12 Assessment and Reduction of Uncertainty of Measurements by ICP-MS**, Brittany Chambers, Corning RDC, SP-DV-02-D2W70C, Corning NY 14831, chambersbn@corning.com; Alind Barany, Anna Nached
- TP13 Use of Augmented Reality Mixed Reality for Laboratory Remote Training**, Tyler Klein, Corning RDC, SP-DV-01-D1W72C, Corning NY 14831, kleintw@corning.com; Stephen Kuenzli, Anna Nached
- TP14 HMI vs. Sample Dilution -- What Makes Them Different?** Bert Woods, Agilent Technologies, 2850 Centerville Rd, Wilmington DE 19808, bert_woods@agilent.com; Abe Gutierrez
- TP15 Automated Standard Dilution Analysis Using the Advanced Valve System for Fast ICP-OES Determinations**, Jesse R. Ingham, Wake Forest University, Department of Chemistry, Salem Hall, Box 7486, Winston-Salem NC 27109, inghjr20@wfu.edu; George L. Donati, Brad T. Jones
- TP16 Determination of Iron Fe(II) and Fe(III) Using ICP-MS Coupled to Ion Exchange Chromatography**, Sebastian Fassbender, Analytik Jena GmbH + Co, Konrad-Zuse-Str. 1, D-07745 Jena, Germany, sebastian.fassbender@analytik-jena.com
- TP17 Determination of Trace Elements in Neodymium Metal Alloys by TQ ICP-MS**, Aline de Carvalho Elias, University of São Paulo, Institute of Chemistry, 748 Prof Lineu Prestes Ave, São Paulo, SP 05508-900, Brazil, aline-carvalho@usp.br; Marciel Santos Luz, Cassianan Seimi Nomura
- TP18 Analysis of Isotonic and Energy Drinks by MIP-OES: Evaluation of Multi-Internal Standard Calibration (MISC) to Improve Accuracy**, Beatriz Martins Fontoura, Federal University of São Carlos, Department of Chemistry, Group for Applied Instrumental Analysis, PO Box 676, São Carlos, SP, 13685-905 Brazil, fontoub@wfu.edu; Nicholas B. Judd, George L. Donati, Bradley T. Jones, Joaquim A. Nóbrega
- TP19 High Sensitivity and Superior Isotopic Ratio Precision 0.01% by Quadrupole ICPMS Equipped with Curved Brubaker Pre-Filter Having Low Mass Cut-Off Technology**, Iouri Kalinitchenko, Analytik Jena GmbH + co. KG, Konrad-Zuse-Str. 1, D-07745 Jena, Germany, iouri.kalinitchenko@analytik-jena.com; Sebastian Faßbender

Thermo Fisher Scientific Young Plasma Scientist Award Forum

Wednesday, January 17, 2024

4. Novel Plasma Spectrochemical Instrumentation, Microplasmas

- 08:00 IL23 Array Detectors Impact on Plasma Spectrochemical Analysis, Past, Present and Future**, M. Bonner Denton, University of Arizona, Department of Chemistry and Biochemistry, Detector Technology Consortium, Tucson AZ 85721-0041, mbdenton@u.arizona.edu; Jason Amsden



- 08:30 IL24 Acoustic Ion Manipulation: A Novel Means to Gate and Focus Ions**, Jacob T. Shelley, Rensselaer Polytechnic Institute, Department of Chemistry and Chemical Biology, 110 8th St, 228 Cogswell Laboratory, Troy NY 12180, shellj@rpi.edu; Julia L. Danischewski, Yi You, Jens Riedel
- 9:00 IL25 How Particle Size Distribution Statistics Impact Single-Particle ICP-TOFMS Analyses**, Alexander Gundlach-Graham, Iowa State University, Department of Chemistry, 1605 Gilman Hall, Ames IA 50011, alexgg@iastate.edu; Raven Buckman, Hark Karkee, Sarah Szakas
- 9:30 IL26 New Inorganic and Isotopic Strategies for High Geographical Resolution Traceability. Application to Environmental and Food Related Issues**, Olivier Donard, LCABIE-IPREM CNRS UMR 5034, Hélioparc, F-64053 Pau, France, olivier.donard@univ-pau.fr
- 10:00 Break**
- 10:20 W01 Calibration Strategies to Improve Accuracy and Sample Throughput in ICP-OES and MIP-OES**, George L. Donati, Bradley T. Jones, Jesse R. Ingham, Nicholas B. Judd, Wake Forest University, Department of Chemistry, Salem Hall, Box 7468, Winston-Salem NC 27109, donatigl@wfu.edu
- 10:40 W02 Artificial Intelligence (AI) Used for Spectral Interference Correction**, Vassili Karanassios, University of Waterloo, Waterloo Institute for Nanotechnology, Department of Chemistry, Waterloo ON N2L 3G1, Canada, vkaranassios@uwaterloo.ca; C. Tat
- 11:00 W03 Characterization of a Nitrogen-Sustained MICAP-MS for Single Particle Analysis**, Woolin Lee, Iowa State University, Department of Chemistry, 0228 Hach Hall, 243 Pammel Dr., Ames IA 50011, woolin1@iastate.edu; Alexander Gundlach-Graham
- 11:20 W04 Quantification Capabilities of N₂ MICAP MS with Solution Nebulization and Desolvation**, Monique Kuonen, ETH Zürich, D-CHAB, Laboratory of Inorganic Chemistry, Vladimir-Perlog-Weg 1, CH-8093 Zürich, Switzerland, kuonenmo@inorg.chem.ethz.ch; Bodo Hattendorf, Detlef Günther
- 11:40 W05 Evaluation of a 1/2 Mass M²⁺ Interference Correction Approach for ICP-MS Using Both Single and Multi-Lab Data**, Robert A. Wilson, US FDA Forensic Chemistry Center, 6751 Steger Dr, Cincinnati OH 45237, robert.wilson@fda.hhs.gov
- 12:00 Break**

5. High Precision and Accuracy Isotope Analysis and Its Applications

- 1:00 IL26 Understanding the Origin of Terrestrial Planets with High Precision Stable Isotopic Measurements of Metals**, Frédéric Moynier, Institut de Physique du Globe de Paris, CNRS, Université de Paris, 1 rue Jussieu, Paris, France, moynier@ipgg.fr; Yan Hu, Tu-Han Luu, Wei Dai, Esther Lahoud
- 1:30 IL27 Accurate and Precise Isotope Ratio Measurements by MC-ICP-MS: The Production of Isotope Certified Reference Materials at NRC**, Lu Yang, National Research Council Canada, 1200 Montreal Rd, Building M-12, Room B-18, Ottawa ON K1A 0R6, Canada, lu.yang@nrc-cnrc.gc.ca
- 2:00 W06 Isotopic Composition of Serum Zinc and Copper in Healthy Children and Children with Autism Spectrum Disorder in North America**, Kerri A. Miller, University of Calgary, Department of Physics and Astronomy, 2500 University Dr NW, Calgary AB T2N 1N4, Canada, kamiller@ucalgary.ca; Patrick L. Day, Supriya Behl, Lindsay Stromback, Ariana Delgado, Paul J. Jannetto, Michael E. Wieser, Sunli Q. Mehta, et al.
- 2:15 W07 Copper Isotope Compositions Measured Using the Sapphire Dual Path MC-ICPMS with Collision/Reaction Cell**, Tu-Han Luu, Institut de Physique du Globe de Paris, CNRS, Université de Paris, 1 rue Jussieu, Paris, France, tlou@ipgg.fr; Daniel Peters, Yvan Gérard, Esther Lahoud, Frédéric Moynier
- 2:30 W07B Strontium Isotopic Measurements Using the NEOMA MS/MS In Laser Mode: The Tips and Tricks**, Philippe Telouk, CNRS, LGL-TPE, ENS-Lyon, 46 allée d'Italie, 69364 Lyon Cedex 07, France, telouk@ens-lyon.fr; Vincet Balter
- 2:45 W08 Automated Two-Column Purification for Zn and Cu Isotopes -- Advanced Analytical Methods in Life Sciences**, Anika Retzmann, University of Calgary, Department of Physics and Astronomy, 2500 University Dr NW, Calgary AB T2N 1N4, Canada, anika.retzmann@ucalgary.ca; Kerri Miller, Michael E. Wieser

3:00 Break

5.5. Workshop on Laser-Assisted Spectrochemistry and Its Applications

- 3:20 W09 Characterization of Laser-Induced Plasmas Under Simulated Conditions of Celestial Bodies**, Pavel Porizka, Brno University of Technology, CEITEC Central European Institute of Technology, Purkynova 656/123, 61200 Brno, Czech Republic, pavel.porizka@ceitec.vutbr.cz; Jakub Buday, Erik Képes, Igor Gornushkin, Martin Ferus, Petr Kubelik, Jozef Kaiser



- 3:40 W10 Nano-savers, Potential Theranostics for Stroke Detection and Treatment; Investigation of Their Pharmacokinetics by LA-ICP-MS**, Michaela Kuchynka, Masaryk University in Brno, Department of Chemical Drugs, Kotlarska 2, CZ-611 37 Brno, Czech Republic, 358018@mail.muni.cz; Tereza Padrtova, Peter Scheer, Jana Hlozkova, Radka Opatrilova, Marketa Vaculovicova, Marcela Vlenovska, *et al.*
- 4:00 W11 Multi-Elemental LIBS Analysis as a Readout Method in Immunoassay**, Jozef Kaiser, Brno University of Technology, Central European Institute of Technology CEITEC, Purkynova 656/123, 61200 Brno, Czech Republic, jozef.kaiser@ceitec.vutbr.cz; Karolína Vytisková, Ekaterina Makhneva, Eva Zikmundová, Tereza Bacová, Jakub Buday, Karel Novotny, *et al.*
- 4:20 W12 Capabilities of (Simultaneous) LIBS-ICP-MS Imaging for Microplastics Characterization**, Lukas Brunnbauer, TU Wien, Institute of Chemical Technologies and Analytics, Getreidemarkt 9/164-IAC, A-1060 Vienna, Austria, lukas.brunnbauer@tuwien.ac.at; Philip Mayr, Marianne Ivkic, Stefan Radl, Silvia Larisegger, Andreas Limbeck
- 4:40 W13 Quantification of Deuterium in Polymeric Materials with LIBS**, David Ken Gibbs, TU Wien, Institute of Chemical Technologies and Analytics, Getreidemarkt 9/164-IAC, A-1060 Vienna, Austria, david.gibbs@tuwien.ac.at; Siliva Larisegger, Michael Nelhiebel, Andreas Limbeck
- 5:00 W14 Application of an *In-situ* LIBS Heating Stage for Material Characterization**, Maximilian Podsednik, KAI (Kompetenzentrum Automobil- und Industrieelektronik) GmbH, Technologiepark, Vilach Europastrasse 8, A-9524 Vilach, Austria, maximilian.podsednik@tuwien.ac.at; Jakob Wiliner, Brigit Acheitnet, Ahmed Bahr, Silva Larisegger, Helmut Riedl, Andreas Nanning, Juergen Fleig, *et al.*

Heritage Lecture

Sponsored by Burgener Research

- 5:30 HL03 From Mount Horlick to the Islands of Langerhans – An Analytical Journey**, Michael W. Blades, University of British Columbia, Department of Chemistry, 2036 Main Mall, Vancouver BC V6T 1Z1, Canada, blades@chem.ubc.ca

Wed 3:00 Posters: Biological, Clinical, and Pharmaceutical Materials

- WP01 Quantification of Mercury from Hair and Nail Digestion Using a Triple Quadrupole Inductively Coupled Plasma Mass Spectrometer (Agilent 8900)**, David Eaton, Mayo Clinic, 2050 Superior Dr. NW, Rochester MN 55901, david.eaton@mayo.edu; Steven Eckdahl, Joshua Bornhorst, Paul J. Jannetto
- WP02 Evaluation of Sarstedt Polypropylene CSF Collection Tubes for Metal Contamination by ICP-MS**, Anna Bitzer, Mayo Clinic, 200 1st St SW, Rochester MN 55905, bitzer.anna@mayo.edu; Joshua A. Bornhorst, Paul J. Jannetto
- WP03 Analysis of Hg in Urine Using an Agilent 8900 Triple-Quadrupole Inductively Coupled Plasma Mass Spectrometer (QQQ-ICP-MS) for Biomonitoring and Emergency Responses Applications**, Mark R. Fresquez, Centers for Disease Control and Prevention, 4470 Buford Hwy NE, MS S110-4, Atlanta GA 30341-3717, mwf6@cdc.gov; Jeff Jarrett
- WP04 Rapid and Efficient Microwave Digestion for Elemental Analysis for Comparative Medicine**, Bob Lockerman, CEM Corporation, 3100 Smith Farm Road, P.O. Box 200, Matthews NC 28104, bob.lockerman@cem.com; Macy Harris, Alicia Stell
- WP05 Evaluating a Research Protocol for Collecting Infant Urine on Cotton Pads for Trace Element Analysis by ICP-MS/MS: Pre-Analytical Concerns with Contamination and/or Adsorption of Multiple Analytes**, Joseph R. Teson, New York State Department of Health, Laboratory of Inorganic and Nuclear Chemistry, Wadsworth Center - D324, Albany NY 12201-0509, joseph.teson@health.ny.gov; Aubrey L. Galisha, Christopher D. Palmer, Patrick Parsons
- WP06 Platform Comparison for Separation and Quantification of Seven Arsenic Species in Human Urine by IC-ICP-MS**, J. Wyatt Martin, Centers for Disease Control and Prevention, 4770 Buford Hwy NE MS S110-5, Atlanta GA 30341-3717, otk7@cdc.gov; Reba Williams, Danielle Stokes, Morgan J. Nail, Deanna R. Jones, Cynthia D. Ward, Liza Valentin-Blsdini
- WP07 Pediatric Kidney Stone Characterization and Measurement of Heavy Metals and Gadolinium**, Michelle L. Wermers, Mayo Clinic, 200 1st St SW, Rochester MN 55905, wermers.michelle@mayo.edu; Patrick L. Day, Paul J. Jannetto, Joshua A. Bornhorst
- WP08 A Rapid Method for Speciation of Mercury (MeHg and iHg) in Whole Blood by Isocratic LC Coupled to ICP-MS/MS Suitable for Assessing Exposure Where Total Hg is >5 µg/L**, Emily J. Pacer, New York State Department of Health, Laboratory of Inorganic and Nuclear Chemistry, Wadsworth Center, PO Box 509, Albany NY 12201-0509, epacer@albany.edu; Christopher D. Palmer, Patrick J. Parsons
- WP09 Determination of 24 Elements in Whole Blood by ICP-MSMS to Support Human Biomonitoring Studies: Validation of Challenges for Some Hard-to-Detect Analytes at Low Levels**, Charelle S. Trim, New York State Department of Health, Biggs Laboratory ESP D164-A, Wadsworth Center, Albany NY 12237, charelle.trim@health.ny.gov; Christopher D. Palmer, Kayla F. Mehigan, Garret M. Smith, Patrick J. Parsons



- WP10 The Quantification of Trace and Essential Elements in Hair Using Hot Block Digestion and Agilent 8900 ICP-QQ**, Gregory M. Zinn, Doctor's Data Inc., 3755 Illinois Ave, St. Charles IL 60174, gzinn@doctorsdata.com; Dean Bass
- WP11 Trouble Digesting Your Milk? An Examination of Heavy Metals in Alternative Dairy Milk**, Alicia Stell, CEM Corporation, 3100 Smith Farm Road, Matthews NC 28104, alicia.stell@cem.com; Samuel Heckle, Macy Harris, Patricia Atkins, Alan Katz, Peter Catdoulis
- WP12 Proposed Development of a New Liver Reference Material for Trace Element Analysis: Feasibility of Using Bovine and/or Caprine Liver from Animals Dosed with Lead and Toxic Elements**, Deanna R. Luneau, New York State Department of Health, Laboratory of Inorganic and Nuclear Chemistry, Wadsworth Center, PO Box 509, Albany NY 12201-0509, deanna.luneau@health.ny.gov; Aubrey L. Galuska, Pam Kruger, Christopher D. Palmer, Patrick J. Parsons
- WP13 Investigation of the Effect Gut Microbiota Have on the Calcium Isotopic Composition in Different Calcium Reservoirs of Mice**, Dorothy Walls, University of Calgary, Department of Physics and Astronomy, 2500 University Dr NW, Calgary AB T2N 1N4, Canada, dorothy.walls2@ucalgary.ca; Catherine M. Keenan, Laurie Wallace, Patricia R.M. Souza, Kathy D. McCoy, Benedikt Halgrimsson, Keith Sharky, et al.
- WP14 Determination of Zinc Isotopic Composition in Biological Tissues**, Farnaz Nasehi Kalajahi, University of Calgary, Department of Physics and Astronomy, 2500 University Dr NW, Calgary AB T2N 1N4, Canada, farnaz.nasehikalajah@ucalgary.ca; Catherine M. Keenan, Laurie Wallace, Patricia R.M. Souza, Kathy D. McCoy, Keith Sharky, Michael Wieser
- WP15 Zn, Cd, Pb, Se, and Br Measured in Limited Quantity Human Prostate Biopsy Tissue Using ICP-MS and INAA**, Michael Wiles, Department of Chemistry, 601 S. College Ave, Columbia MO 65211, mwwn9c@mail.umkc.edu; John Brockman, Alan M. Diamond
- WP16 Improving the Limits of Detection for a Multi-Element Trace Metals ICPMS Method**, Olivia Cochran, Oak Ridge Institute for Science and Education, P.O. Box 117, Oak Ridge TN 37831, sgx2@cdc.gov; Reba Williams, Deanna R. Jones, Cynthia D. Ward, Liza Valentin-Blasini
- WP17 Measurement of Copper and Zinc in Urine Using the NexION 5000**, Patrick L. Day, Mayo Clinic, 200 1st St SW, Rochester MN 55905, day.patrick@mayo.edu; Steven Eckdal, Joshua A. Bornhorst, Paul J. Jannetto

Posters: Elemental Speciation, Metallomics

- WP18 Comparison of Fibers for SPME Extraction of Mercury Species in Whole Blood**, Christopher Hamilton, Centers for Disease Control & Prevention, Inorganic and Radiation Analytical Toxicology Branch, 4770 Buford Hwy NE MS S1100-5, Atlanta GA 30341-3717, nsr1@cdc.gov; Ziyi Li, Yuliya Sommer, Deanna Jones, Cynthia Ward, Liza Valentin-Blasini
- WP19 Method Validation of the TSID-SPME-GC-ICP-DRS-MS Mercury Speciation Method on AgilentR 7890 GC and 8900 ICP-MS**, Ziyi Li, Centers for Disease Control and Prevention, Inorganic and Radiation Analytical Toxicology Branch, 4770 Buford Hwy NE, MS S110-5, Atlanta GA 30341-3717, mwq7@cdc.gov; Yuliya L. Sommers, Christopher Hamilton, Deanna M. Jones, Cynthia D. Ward, Liza Valentin-Blasini
- WP20 Mercury Speciation Inter-Laboratory Sample Exchange**, Yuliya L. Sommer, Centers for Disease Control and Prevention, Inorganic and Radiation Analytical Toxicology Branch, 4770 Buford Hwy NE MS S110-5, Atlanta GA 30341-3717, ysommer@cdc.gov; Po-Yung Chen, Deanna R. Jones, Ziyi Li, Christopher Hamilton, Britnee Bailey, Cynthia D. Ward, Liza Valentin-Blasini
- WP21 Method Validation of an Arsenic Speciation Method in Urine with Baseline Separation of Arsenobetain and Trimethylarsene Oxide**, Danielle Stukes, Centers for Disease Control and Prevention, Inorganic and Radiation Toxicology Branch, 4770 Buford Hwy NE MS S110-5, Atlanta GA 30341-3717, yhx9@cdc.gov; Reba Williams, Deanna R. Jones, Cynthia D. Ward, Liza Valentin-Blasini
- WP22 Determination of Total Mercury and Methylmercury in Fish by Direct Thermal Decomposition Atomic Absorption Spectrometry**, Violina Angelova Rizova, Agricultural University -Plovdiv, 12 Mendelev St, 4000 Plovdiv, Bulgaria, vileriz@abv.bg
- WP23 The Determination of Nutritional and Toxic Elements in Plant-Based Foods Using NexION® Series ICP-MS**, Liyan Xing, PerkinElmer, 501 Rowntree Dairy Rd, Unit #6, Woodbridge, ON L4L 8H1, Canada, liyan.xing@perkinelmer.com; Ewa Pruszkowski, Chady Stephan, Aaron Hineman
- WP24 Sensitive, Fast and Simultaneous Analysis of Cr Species Using μ LC-ICP-MS**, Jelle Verdonck, ON5, Herestraat 49 Box 952, B-3000 Leuven, Belgium, jelle.verdonck@kuleuven.be; Katrien Poets, Jeroen Vanoirbeek, Erik Smolders, Lode Godderis

Posters: Laser-Assisted Spectrochemistry, LIBS



- WP25 Schlieren Imaging of Nanosecond and Femtosecond Laser-Induced Plasmas**, Ira Stokes, University of Arizona, Aerospace and Mechanical Engineering, 1130 Mountain Ave AME Bldg N414, Tucson AZ 85721, dhdiazo@arizona.edu, istokes@arizona.edu; Daniel Diaz, David Hahn
- WP26 Characteristics of Ceramic Nanoparticles Using Laser Ablation - Single Particle-ICP-MS**, Laura Kronlacher, TU Wien, Institute of Chemical Technologies and Analytics, Getreidemarkt 9/164-I2AC, A-1060 Vienna, Austria, laura.kronlacher@tuwien.ac.at; Zuzana Gajarska, Andres Limbeck
- WP27 Development and Forensic Validation of a Laser Breakdown Spectroscopy and Inductively Coupled Plasma Mass Spectrometry (LIBS-ICPMS) Technique for Trace Analysis of Solder**, Katie Moghadam, Queen's University, Department of Chemistry, 90 Bader Ln, Kingston ON K7L 3N6, Canada, k.moghadam@queensu.ca; Diane Beauchemin, Claude Dalpe
- WP28 Spiked Filter Paper as a Synthetic Calibrating Standard for Plant Analysis by Laser-Induced Breakdown Spectrometry**, Aline de Carvalho Elias, University of Sao Paulo, Institute of Chemistry, 748 Prof Lineu Prestes Ave, Sao Paulo, SP 05508-900, Brazil, aline-carvalho@usp.br; Sady Lobo, Aline Pereira de Oliveria, Ivanise Gaubeur, Juliana Naozuka, Alex Virgilio, Cassianan Seimi Nomura
- WP29 The Next Advancement in Online-Laser Ablation of Solids in Liquids (LASIL) Cell Design: The Stethoscope Cell**, Maximilian Podsednik, KAI (Kompetenzentrum Automobil- und Industrieelektronik) GmbH, Technologiepark, Vilach Europastrasse 8, A-9524 Vilach, Austria, maximilian.podsednik@tuwien.ac.at; Maximilian Weiss, Silva Larisegger, Michael Nelhiebel, Andreas Limbeck
- WP30 Trace Element Distribution in Uranium Metal Revealed by Laser Induced Breakdown Spectroscopy**, Kyle Makovsky, Pacific Northwest National Laboratory, 902 Battelle Blvd, Richland WA 99354, kyle.makovsky@pnnl.gov; Matthew Athon, Jacqueline Royer, Scott Swenson
- WP31 Design of a Motorized X-Y-Z Stage for Chemical Mapping Using Laser-Induced Breakdown Spectroscopy (LIBS)**, Tyler Wilson, University of Arizona, Aerospace and Mechanical Engineering, 1130 Mountain Ave AME Bldg N414, Tucson AZ 85721, dhdiazo@arizona.edu, tyerwilson@arizona.edu; Daniel Diaz, David W. Hahn

Thursday, January 18, 2024

JAAS Emerging Investigator Lectureship Award Forum

6. Laser-Assisted Spectrochemistry, LIBS

- 09:00 IL29 Review of Future of Laser Microanalysis Using Ultrashort Wavelengths**, Davide Bleiner, EMPA, Swiss Federal Laboratories for Materials, Uberlandstrasse 129, CH-8600 Dubendorf, Switzerland, davide.bleiner@empa.ch; Alexander Von Winckelmann, Adrian Wichser
- 09:30 IL29B Exploring the Connection Between the Spectral Signatures of Bio-Metals Present in Human Plasma and Donor Health Status**, Nouredine Melikechi, Ali Salt, Kemal Efe Eseller, Heimar Adler, University of Massachusetts Lowell, Kennedy college of Science, 220 Pawtucket St., Lowell, MA 01854; nouredddine.melkechi@uml.edu
- 10:00 Break**
- 10:20 Th01 High Resolution LIBS-ICP-MS Imaging of Geological Materials**, Joshua Scott Stone, Elemental Scientific Lasers LLC, 685 Old Buffalo Trail, Bozeman MT 59715, joshua.stone@icpms.com; C. Derrick Quarles Jr, Ciaran O'Connor
- 10:40 Th02 Multiple S Isotopes in Sulfides by High Spatial Resolution MC-ICPMS in Mesozoic Sulfides Reveal Unexpected Large Variations in Mass Independent Fractionation**, Michael Pribil and W. Ian Ridley, USGS, Denver Federal Ctr., Box25046, 973, Denver, CO 80225, iridley@usgs.gov
- 11:00 Th03 LIXS for the Analysis of Battery Materials**, Davide Bleiner, EMPA, Swiss Federal Laboratories for Materials, Uberlandstrasse 129, CH-8600 Dubendorf, Switzerland, davide.bleiner@empa.ch; Alexander Von Winckelmann, Adrian Wichser
- Thu 11:20 Th04 A Novel Approach to Fluorine Quantification with Laser Ablation Inductively Coupled Mass Spectrometry (LA-ICP-MS) Through Formation of CaF^+ from Ablated Particle Mixtures and Plasma Effects**, Garry M. McGuirk, Betts Atomic Power Lab, 814 Pittsburgh-McKeesport Blvd, Bldg L-2, Room 131, West Mifflin PA 15122-2849
- Thu 11:40 Th05 Throughput and Data Quality Enhancements Through Continuous Acquisition Workflows in LA-ICP-MS**, Stijn J.M. Van Malderen, Teledyne Photon Machines, 384 Gallatin Park Dr, Bozeman MT 59715, stijn.vanmalderen@teledyne.com; Lucas D. Smith
- 12:00 Break**

6. Laser-Assisted Spectrochemistry

- 1:00 IL29C Laser-Induced Plasma for Spectroscopy and More**, Igor B. Gornushkin, BAM Federal Institute for Materials Research and Testing, Richard-Willstätter str.11, 12489 Berlin, Germany, igor.gornushkin@bam.de



- 1:30 IL29D TBD**, Jhanis J. González, Applied Spectra Inc., 950 Riverside Pkwy #90, West Sacramento, CA 95605, jjgonzalez@lbl.gov, jhanis@appliedspectra.com
- 2:00 Th06 Nitrogen as Ablation Atmosphere for LA-N₂ MICAP-MS**, Dylan Kaeser, ETH Zürich, Laboratory of Inorganic Chemistry, Vladimir-Perlog-Weg 1, CH-8093 Zürich, Switzerland, dkaeser@inorg.chem.ethz.ch; Moniue Kuonen, Bodo Hattendorf, Detlef Günther
- 2:20 Th07 Laser Ablation ICP-ToF-MS to Investigate the Interaction of MRI Contrast Agents with Extracellular Matrix Components**, Heike Traub, Bundesanstalt für Materialforschung und -prüfung (BAM), Richard-Willstätter str.11, 12489 Berlin, Germany, heike.traub@bam.de; Mathias Schannor, Anke Stach, Bjorn Meermann, Antje Ludwig
- 2:40 Th08 A Novel Sample Preparation and Calibration Strategy for Nanoparticles Analysis Using Laser Ablation Sampling Single Particle-ICP-MS**, Laura Kronlacher, TU Wien, Institute of Chemical Technologies and Analytics, Getreidemarkt 9/164-I2AC, A-1060 Vienna, Austria, laura.kronlachner@tuwien.ac.at; Zuzana Gajarska, Andres Limbeck
- 3:00 Break**
- Thu 3:20 Th09 Diagnostics of the Femtosecond Laser-- Induced Plasmas for Spectrochemical Analysis**, Daniel Diaz, University of Arizona, Aerospace and Mechanical Engineering, 1130 Mountain Ave AME Bldg N414, Tucson AZ 85721, dhdiazo@arizona.edu; David W. Hahn
- 3:35 Th10 Studying the Influence of UV Radiation on the Water Uptake Behavior of Polymer Films by LA-ICP-MS**, David Ken Gibbs, TU Wien, Institute of Chemical Technologies and Analytics, Getreidemarkt 9/164-IAC, A-1060 Vienna, Austria, david.gibbs@tuwien.ac.at; Siliva Larisegger, Michael Nelhiebel, Johannes Frank, Andreas Limbeck
- 3:50 Th11 Detection of Lead and Copper in Drinking Water with Laser-Induced Breakdown Spectroscopy**, Alejandra Carreon, University of Arizona, Aerospace and Mechanical Engineering, 1130 Mountain Ave AME Bldg N414, Tucson AZ 85721, dhdiazo@arizona.edu; Daniel Diaz, David W. Hahn
- 4:05 Th12 Direct Analysis of Si, SiC, and GaN Wafers by LA-GED-MSAG-ICP-MS**, Katsu Kawabata, IAS Inc., 2-2-1 Hinohonmachi, Hino, Tokyo 190-0011, Japan, katsu.kawabata@iasinc.jp; Koshi Suzuki, Tatsu Ichinose

7. Workshop on Novel Plasma Instrumentation

- 4:20 Th13 MICAP-TOFMS for the Analysis of Metals in Airborne Particles**, Martin Tanner, TOFWERK AG, Schorenstrasse 39, CH-3645 Thun, Switzerland, m.tanner@tofwerk.com; Carsten Stoermer
- 4:40 Th14 Coupling of a Flow Cytometer to the Vertical Oriented ICP-TOMS for Single Cell Analysis**, Sandro Fazzolari, ETH Zürich, Laboratory of Inorganic Chemistry, Vladimir-Perlog-Weg 1, CH-8093 Zürich, Switzerland, sandrofa@inorg.chem.ethz.ch; Detlef Günther
- 4:55 Th15 The Vibrating Capillary Nebulizer; A Unique Interface for Capillary Electrophoresis ICP-MS**, Tristen L. Taylor, Iowa State University, Department of Chemistry, 2415 Osborn Dr., Ames IA 50011, ttaylor@iastate.edu; Alexander Gundlach-Graham
- 5:10 Th16 Digital Quadrupole Mass Filter Operated in Higher Stability Regions for ICP-MS**, Rui Hu, Iowa State University, Department of Chemistry, 1605 Gilman Hall, Ames IA 50011-1021, ruihu@iastate.edu; Alexander Gundlach-Graham

Heritage Lecture

- 2401-014 Thu 5:30 HL04 TBA**, Koichi Chiba, Kwansei Gakuin University, Japan

Thu 3:00 Posters Agriculture, Biological, Food Analysis

- ThP01 Exposure Assessment of Plant-Based Protein Sources Using Inductively Coupled Plasma Mass Spectrometry**, Helen Lord, Queen's University, Department of Chemistry, 90 Bader Ln, Kingston ON K7L 3N6, Canada, 17hgl1@queensu.ca; Kevin Sun, Kelly LeBlanc, Zoltan Mester, Diane Beauchemin
- ThP02 Closer to Zero: Analytical Challenges in Food Safety**, Peter Kettisch, Anton Paar USA, 10215 Timber Ridge Dr, Ashland VA 23005, peter.kettisch@anton-paar.com
- ThP03 ICP-OES Analysis of Titanium Dioxide in Foods Prepared with One-Step Digestion**, Paul Krampitz, Agilent Technologies, 201 Hansen Ct, Suite 108, Wood Dale IL 60191, paul.krampitz@agilent.com
- ThP04 ICP-OES Analysis of Nutrient Elements for Labeling Compliance of Dietary Food Supplements**, Paul Krampitz, Agilent Technologies, 201 Hansen Ct, Suite 108, Wood Dale IL 60191, paul.krampitz@agilent.com; Alyssa Stevenson

Posters Isotopes, Environmental, Forensics, Geochemical Analysis

- ThP05 U-Series Dating of Low-Uranium Flowstones from the Bahamas to Constrain Late Pleistocene Sea-Level Highstands**, Peter Chutcharavan, University of Minnesota - Twin Cities, Department of Earth and Environmental Sciences, 116 Church



St SE, Minneapolis MN 55455, chutc001@umn.edu; R. Lawrence Edwards, David A. Richards, Jacqueline Austermann, Gina E. Moseley

- ThP06 Analysis of Low, Mid, and High-Grade Molybdenum Ore Using the Agilent 5900 ICP-OES**, Ana-Sarahi Garcia-Gonzalez, Agilent Technologies, 2850 Centerville Rd, Wilmington DE 19808, ana.garcia-gonzalez@agilent.com; Steve Wall
- ThP07 ICP-MS Analysis of Mining Samples after Aqua Regia Digestion**, Ewa Pruszkowski, PerkinElmer Inc., 5190 Apennines Cir, San Jose CA 95138, ewa.pruszkowski@perkinelmer.com; Chady Stephen
- ThP09 Approach to Assess Incidence of Metal(loid)-Bearing Nanoparticles in Road Dust Samples**, Mary-Luyza Avramescu, Health Canada, Environmental Health Science and Research Bureau, 251 Sir Frederick Banting Dwy, Ottawa ON K1A 0K9, Canada, mary-luyza.avramescu@hc-sc.gc.ca; Katherine Casey, Christine Levesque, Suzanne Beauchemin
- ThP10 Determination of Micro Plastics Using Total Flow Nebulization and Triple Quadrupole ICP-MS**, Craig Jones, Agilent Technologies, 5301 Stevens Creek Blvd, Santa Clara CA 95051-7201, craig_jones@agilent.com
- ThP11 Total Metals in Drinking Groundwater**, Elham Zeini Jahromi, Albert Centre for Toxicology, HM-B19, 3330 Hospital Drive NW, Calgary, AB T2N 4N1, Canada, ezeinija@ucalgary.ca; Lorinda Butlin, David Kinniburgh
- ThP12 Revisiting ICP-MS Environmental Analysis Methods EPA 200, 6020, and SW-846 with Novel Ion Optics Technology**, Tamas Ugrai, Perkinelmer, 2651 Warrenville Rd, Suite 100, Dowers Grove IL 60515, tamas.ugrai@perkinelmer.com
- ThP13 A Dilute-and-Shoot Method for Determination of Inorganic Impurities in Li-Ion Batteries Electrolyte Samples by ICP-OES**, Ana-Sarahi Garcia-Gonzalez, Agilent Technologies, 2850 Centerville Rd, Wilmington DE 19808, ana.garcia-gonzalez@agilent.com; Christopher Conklin, Ed Burt
- ThP14 Lithium Brine Elemental Analysis Made Easy by ICP-OES**, Ana-Sarahi Garcia-Gonzalez, Agilent Technologies, 2850 Centerville Rd, Wilmington DE 19808, ana.garcia-gonzalez@agilent.com; Christopher Conklin
- ThP15 Trace Elemental Determination in 30% TDS Brines Using an Agilent ICP-OES**, Ana-Sarahi Garcia-Gonzalez, Agilent Technologies, 2850 Centerville Rd, Wilmington DE 19808, ana.garcia-gonzalez@agilent.com; Christopher Conklin
- ThP16 Elemental Analysis of Metals in Lithium Ion Battery Raw Materials by ICP-OES**, Ana-Sarahi Garcia-Gonzalez, Agilent Technologies, 2850 Centerville Rd, Wilmington DE 19808, ana.garcia-gonzalez@agilent.com; Christopher Conklin, Ed Burt
- ThP17 Determination of Elemental Impurities in Lithium-Ion Battery Cathode Materials by ICP-OES**, Sima Singha, Agilent Technologies Inc., 5301 Stevens Creek Blvd, Santa Clara CA 95051-7201, sima.singha@agilent.com; Patrick Simmons, Neli Drvodelic
- ThP18 Determination of Elemental Impurities in Silicon Carbide Anode Materials for Lithium-Ion Battery by ICP-OES**, Sima Singha, Agilent Technologies Inc., 5301 Stevens Creek Blvd, Santa Clara CA 95051-7201, sima.singha@agilent.com; Ying Qi
- ThP19 Analysis of Various Lithium Battery Starting Products via Multiple Elemental Techniques**, Bert Woods, Agilent Technologies, 2850 Centerville Rd, Wilmington DE 19808, bert_woods@agilent.com; Ana Garcia-Gonzalez
- ThP20 Direct Isotopic Analysis of Sand Plutonium on Cotton Swipes with TQ-ICP-MS**, Veronica Bradley, Oak Ridge National Laboratory, Chemical Sciences Division, 1 Bethel Valley Rd, Oak Ridge TN 37831-6131, bradleyvc@ornl.gov; Benjamin Manard
- ThP21 Development and Assessment of Laser Ion Source at Titan for ^{222}Rn Progeny Abundance Measurement**, Behnam Ashrafkhani, University of Calgary, Department of Physics and Astronomy, 2500 University Dr NW, Calgary AB T2N 1N4, Canada, behnam.ashrafkhan1@ucalgary.ca; Chris Chamber, Kerri Miller, Dustin Pearson, Michael Wieser, Rober Thompson, Ania Kwiatkowski, Aaron Goodarz
- ThP22 Isotopic Measurements for Nuclear Applications Using Next Generation MC-ICP-MS/MS**, Daniel R. Dunlap, Oak Ridge National Laboratory, Chemical Sciences Division, 1 Bethel Valley Rd, Oak Ridge, TN 37831, dunlapdr@ornl.gov

Friday, January 19, 2024

8. Glow Discharge Spectroscopy

Heritage Lecture

- 08:00 HL05 Did I Choose Glow Discharge or Did Glow Discharge Choose Me?** Volker Hoffmann, IFW Dresden, Helmholtzstrasse 20, D-01069 Dresden, Germany, v.hoffmann@ifw-dresden.de
- 09:00 IL30 Microwave Enhanced Glow Discharge Optical Emission Spectrometry**, Steven J. Ray, State University of New York at Buffalo, Department of Chemistry, Buffalo NY 14221, sjray2@buffalo.edu; Mitchell Stry
- 09:30 IL31 Quantitative Depth Profile Analysis with Pulsed GD-OES -- New Possibilities and Limitations**, Arne Bengtson, Swerim AB, Isafjordsgatan 28A, SE-16407 Kista, Sweden, arne.bengtson@swerim.se; David Malmstrom



10:00 Break

10:20 IL32 Nanoscale Materials Characterization via Glow Discharge Optical Emission Coded Aperture Spectral Imaging Elemental Mapping, Gerardo Gamez, Texas Tech University, Department of Chemistry and Biochemistry, Box 41061, Lubbock TX 79409-1061, gerardo.gamez@ttu.edu; Harshit Agrawal, Rajendra Joshi

10:50 IL33 Liquid Sampling - Atmospheric Pressure Glow Discharge Combined Atomic and Molecular Ionization Source Coupled with an Orbitrap Mass Spectrometer - Versatility in Sampling Strategies and Applications, Joseph V. Goodwin, Clemson University, Biosystems Research Complex Laboratory 102, 105 Collings St, Clemson SC 29634-0974, jvg@clemson.edu; R. Kenneth Marcus

11:20 IL34 European Working Group for Glow Discharge Spectroscopy -- Aims and Achievements, Peter Robinson, MassCare Ltd., 11 Waterside Way, Middlewich, Cheshire CW10 9HP, United Kingdom, pete@masscare.co.uk

11:40 F01 Practical Applications and Principles of Radio-Frequency Pulsing in Glow Discharge Spectroscopy, Andrew P. Storey, LECO Corporation, 3000 Lakeview Ave, St. Joseph MI 49085, andrew_storey@leco.com; Aaron Walczewski, Kevin Brushwyler, Scott Chrispell, and Rebecca Quardokus

12:00 Break

1:00 F02 Improved Quantification Limits of Carbon, Nitrogen, and Oxygen Using the New CNO Option for the Thermo Scientific Element CD Plus Glow Discharge Mass Spectrometer, Hauke Vollstaedt, Thermo Fisher Scientific (Bremen) GmbH, Hanna-Kunath-Str. 11, D-28199 Bremen, Germany, hauke.vollstaedt@thermofisher.com; Torsten Lindeman, Tony Cade, Darren Tollstrup

1:20 F02B

9. Biomedical, Clinical ICP-MS

1:40 F03 Determination of Hair Zinc Concentrations Using LA-ICP-MS: Zinc Nutrition Among Ancient Andeans, Dulasiri Amarasingiwardena, Hampshire College, School of Natural Science, 893 West St, Amherst MA 01002-3359, dans@hampshire.edu; Bernardo Arriaza, David Blumenstiel

2:00 F04 Pre-Analytic Considerations for the Determination of an Ultra Trace Metals Panel for Analysis of Brain Tissue Matrix, Sarah A. Erdahl, Mayo Clinic, 200 First St. SW, Rochester MN 55905, erdahl.sarah@mayo.edu; Steven J. Eckdahl, Paul J. Jannetto

2:20 F05 Leveraging ICP-MS/MS for Exposomic Studies: Measuring 41 Trace Elements in Human Urine, Aubrey L. Galusha, New York State Department of Health Empire State Plaza, Laboratory of Inorganic and Nuclear Chemistry, Wadsworth Center - D324, Albany NY 12201-0509, aubrey.galusha@health.ny.gov; Auberian C. Farnsworth, Joseph Teson, Christopher Palmer, Patrick Parsons

2:40 F06 Multielement Analysis of Blood by ICP-MS/MS for Both Human Biomonitoring Studies and Excessive Exposures: Method Requirements and Regulatory Considerations, Christopher D. Palmer, New York State Department of Health, Biggs Laboratory Empire State Plaza D320-A, Wadsworth Center, Albany NY 12237, christopher.palmer@health.ny.gov; Charelle S. Trim, Kayla F. Mehigan, Garret M. Smith, Patrick J. Parsons

3:00 F07 Rescuing Clotted Whole Blood Samples for Trace Element Analysis by ICP-MS/MS: Challenges, Successes, and Pitfalls, Patrick J. Parsons, New York State Department of Health, Laboratory of Inorganic and Nuclear Chemistry, Wadsworth Center, Albany NY 12237, patrick.parsons@health.ny.gov; Christopher D. Palmer, Kayla F. Mehigan, Jeffrey K. Wickliffe, Maureen Lichtveld

3:20 F08 Rapid ICP-MS Analysis of Dried Blood Spots from Solid Substrates via Direct Microextraction, Cameron Stouffer, Clemson University, Department of Chemistry, 105 Collings St Rm 102, Clemson SC 29634, cstouff@clemson.edu; R. Kenneth Marcus

3:40 F09 Development of a Clinical Arsenic Speciation Method on the prepFast-IC System, Sarah A. Erdahl, Mayo Clinic, 200 First St. SW, Rochester MN 55905, erdahl.sarah@mayo.edu; Michelle L. Wermers, C. Derrick Quarles, Nick Bohlim, Paul J. Jannetto

10. Environmental Analysis

4:00 IL35 Environmental Chemistry: Challenges and Possible Impact of New Anthropogenic Elements and Smallest Particles, Petra Krystek, University of Siegen, Department of Chemistry and Biology, Adolf-Reichwein Str. 2, D-57968 Siegen, Germany, petra.krystek@uni-siegen.de

4:30 IL36 Measuring Millions of Individual Nanoparticles and Microparticles Entrapped in Glaciers in the Alps and Antarctica: spICP-TOFMS Measurement Challenges and Results, John W. Olesik, The Ohio State University, Trace Element Research Laboratory School of Earth Sciences, 125 S. Oval Mall, Columbus OH 43210, olesik.2@osu.edu; Madeleine Lomax-Vogt, Lucas Carter, Stanislav Kutuzov, Paolo Gabirlli



- 5:00 IL37 Environmental Applications of Solid Sampling ETV-ICPOES**, Diane Beauchemin, Queen's University, Department of Chemistry, 90 Bader Lane, Kingston, ON K7L 3N6, Canada, diane.beauchemin@queensu.ca
- 5:30 F10 Collection and Analysis of Automotive Exhaust Samples for Determination of Vanadium**, Ela Bakowska, Corning RDC, SP-DV-02-D2W69C, Corning NY 14831, bakowskae@corning.com; Misty N. Riesbeck, Marc Besch
- 5:45 F11 The Development of Certified Reference Materials for Total and Synthetic Rainwater-Leachable Elements in Soils**, Kelly LeBlanc, National Research Council of Canada, Metrology Research Center, 1200 Montreal Rd, M12, G7, Ottawa ON K1A 0R6, Canada, kelly.leblanc@nrc.ca; Calvin Palmer, Kenny Nadeau, Christine Brophy, Taddese godeto, Zoltan Mester, Patricia Grinberg

11. Workshop on Environmental Analysis

- 6:00 F13 A Bio-Accessibility Study of Potentially Toxic Elements in Insect-Based Alternative Proteins Using Inductively Coupled Plasma Mass Spectrometry**, Cameron Pytyck, Queen's University, Department of Chemistry, 90 Bader Lane, Kingston ON K7L 3N6, Canada, 15crp5@queensu.ca; Kelly L. LeBlanc, Calvin Palmer, Zoltan Mester, Diane Beauchemin
- 6:15 F14 Development of a spICP-MS Method for On-Line Aerosol Metal Characterization**, Laura Torrent, Paul Scherrer Institute (PSI), OVGA/ 119, Forschungsstrasse 111, CH-5232 Villigen-PSI, Switzerland, laura.torrent@psi.ch; Ayush Agarwak, Tianyu Cen, Albert Josef Schuler, Christian Ludwig
- 6:30 F15 Direct Major and Trace Elemental Composition Analysis of Seawater by ICP-OES**, Ana-Sarahi Garcia-Gonzalez, Agilent Technologies, 2850 Centerville Rd, Wilmington DE 19808, ana.garcia-gonzalez@agilent.com; Christopher Conklin
- 6:45 F16 Bio-Accessibility Study of Black Fly Larvae Using Inductively Coupled Plasma Mass Spectrometry**, Qiqi Zhang, Queen's University, Department of Chemistry, Chernoff Hall, 90 Bader Ln, Kingston, ON K7L 2S8, Canada, 17qz@queensu.ca; Diane Beauchemin, Zoltan Mester
- 7:00 F17 Investigation of Arsenic and Other Mine-Related Contaminants in Garden Vegetables from Yellowknife**, Andre Castillo, Queen's University, Department of Chemistry, 90 Bader Ln, Cherrhoff Hall, Kingston, ON K7L 3N6, Canada, 12aic1@queensu.ca; Sydney Cooper, David Patch, Deborah Motto Meira, Diane Beauchemin, Iris Koch, Mike Palmer
- 7:15 F18 Quantification of Rare Earth Elements in Wastewater Treatment Plants by ICP-MS**, Chiara Fabbretti, ETH Zürich, Department of Chemistry and Applied Biosciences HCI G 122, Vladimir-Perlog-Weg 1, CH-8093 Zürich, Switzerland, fchiara@inorg.chem.ethz.ch; Detlef Günter, Ralf Kagi

Saturday, January 20, 2024

12. Nuclear Elemental Mass Spectrometry

Heritage Lecture

- 08:00 HL06 Reflections on Trace Isotope Measurement R&D in the U.S. DOE National Labs**, Gregory C. Eiden, Idaho National Laboratory, Idaho Falls ID, gregory.eiden@inl.gov, eidengc@gmail.com
- 09:00 IL38 Analysis of Single Uranium Particles by ICP-MS**, Benjamin T. Manard, Oak Ridge National Laboratory, Chemical Science Division, One Bethel Valley Rd, Oak Ridge TN 37831-6415, manardbt@ornl.gov
- 09:30 IL39 Evolution of Actinide Isotope Ratio Determination with the Liquid Sampling - Atmospheric Pressure Glow Discharge Combined Atomic and Molecular Ion Source with an Orbitrap Mass Spectrometer**, R. Kenneth Marcus, Clemson University, Department of Chemistry, Biosystems Research Complex, Clemson SC 29634-1905, marcusr@clemson.edu; Benjamin T. Manard, Joseph V. Goodwin
- 10:00 Break**
- 10:20 S01 Rapid Isotopic Analysis of Uranium Particles by Laser Ablation MC-ICP-MS**, Josh Wimpenny, Lawrence Livermore National Laboratory, 700 East Ave, Livermore CA 94550, wimpennyj@lnl.gov
- 10:40 S02 Measurement of Pu, U, and Am in Hair and Nails of Tissue Donors to the United States Trans-Uranium Registries Using Extraction Chromatography and ICP-MS**, John Brockman, University of Missouri, brockmanjd@missouri.edu
- 11:00 S03 Electrothermal Vaporization Inductively Coupled Plasma Tandem Mass Spectrometry Investigations for Nuclear Forensics Analyses**, Isaac J. Arnquist, Pacific Northwest National Laboratory, 902 Battelle Blvd, PO Box 999, Richland WA 99354, isaac.arnquist@pnnl.gov; Kirby P. Hobbs, Amanda French, Chelsie L. Beck
- 11:20 S04 Periodic Trends and Actinide Reactivity with Novel Reaction Gases Using QQQ-ICP-MS**, Amanda D. French, Pacific Northwest National Laboratory, 902 Battelle Blvd, PO Box 999, Richland WA 99354, amanda.french@pnnl.gov; Kirby P. Hobbs, Kali Melby, Richard Cox, E. Bylaska, E.W. Hoppe, I.J. Arnquist, C. Beck, K. Harouska
- 11:40 S05 Rapid Determination of Chlorine Isotopic Ratios Using QQQ-ICP-MS/MS with O₂ Gas: Application to Molten Salt Reaction (MSR) Research**, Tyler D. Schlieder, Pacific Northwest National Laboratory, 790 6th St, 3420/1271B,



Richland WA 99354, tyler.schlieder@pnnl.gov; Nicco D. Rocco, Maria Laura di Vacri, Isaac Arnquist, Danny Bottenus, Zach Huber

12:00 Break

1:00 S06 Utilizing Electrothermal Vaporization - ICP-MS to Detect Environmental Contaminants, Cole Hexel, Oak Ridge National Laboratory, Chemical Sciences Division, PO Box 2008, MS 6131, Oak Ridge TN 37831-6131, hexelcr@ornl.gov

2404-118 Sat 1:20 S07 Direct Measurement of Pu Isotopes in Complex Sample Matrices Using ICP-MS/MS, Kirby P. Hobbs, Pacific Northwest National Laboratory, 902 Battelle Blvd, PO Box 999, Richland WA 99354, kirby.hobbs@pnnl.gov; Amanda D. French, Isaac J. Arnquist, Christie L. Beck

1:40 S08 Harnessing the Power of Tandem Chromatography-Plasma Spectroscopy for the Determination of Fission By-Products in the Environment, Vasileios Anagnostopoulos, University of Central Florida, Department of Chemistry, 4353 Scorpis St, Room 255, Orlando FL 32816, vasileios.anagnos@ucf.edu; Ilana Szlamkowitz, Jordan Stanberry

13. Sample Introduction

2:00 S10 Comparison of Direct and Indirect Measures of Transport Efficiency in Single Particle ICP-MS, Antonio R. Montoro Bustos, National Institute of Standards and Technology, Materials Measurement Laboratory, Chemical Sciences Division, Gaithersburg MD 20899-8391, antonio.montorobustos@nist.gov; Karen E. Murphy, Lee L. Yu, Monique E. Johnson, Michael R. Winchester

2:15 S11 Development of a spICP-MS Method for On-Line Aerosol Metal Characterization, Tisnyu Cen, Paul Scherrer Institue (PSI), OVGA/ 119, Forschungsstraasse 111, CH-5232 Villigen-PSI, Switzerland, tianyu.cen@psi.ch; Laura Torrent, Andre Testino, Christian Ludwig

2:30 S12 Elemental Analysis in Yeast Cells and Selenium Enriched Yeast Cells by ICP-MS with Automated Micro-Flow Sample Introduction, Yan Cheung, Agilent Technologies, 201 Hansen Ct, Suite 108, Wood Dale IL 60191, yan.cheung@agilent.com; Emmett Soffey

2:45 S12B Optimization of a Total Consumption Infrared Heated Sample Introduction System for Single Particle Inductively Coupled Plasma Mass Spectrometry, Zichao Zhou, Queen's University, Department of Chemistry, 90 Bader Lane, Kingston, ON K7L 3N6, Canada, 16zz39@queensu.ca; Mirah J. Burgener, John Burgener, Diane Beauchemin

3:00 Break

14. Analysis of Advanced, Petroleum, and Semiconductor Materials

3:20 S13 How Feasible Is It to Quantify Metals in Cannabis Vape Liquids? Zuzana Gajdosechova, National Research Council of Canada, NRC Metrology, 1200 Montreal Rd, M12, G7, Ottawa ON K1A 0R6, Canada, zuzana.gajdosechova@nrc.ca; Joshua Marleau-Gillette, Ashley Cabecinh, Hana Abramovici, Andrew Wayne

3:40 S14 Determination of Lithium Salt Compounds in Electrolyte Solutions Used in Li-Ion Batteries, C. Derrick Quarles Jr., Elemental Scientific, Inc., 7277 World Communications Dr, Omaha NE 68122, derrick.quarles@icpms.com; Patrick Sullivan, Lisa Balke, Uwe Karst, Dan Wiederin

4:00 S15 Rapid, Acid Free Analysis of Cathode Powders by LA-ICP-OES, Mark Casper, Elemental Scientific, Inc., 7277 World Communications Dr, Omaha NE 68122, mark.casper@icpms.com; Paul Field, Ciaran O'Connor, C. Derrick Quarles Jr., Dan Wiederin

4:20 S16 Investigation of Solid-State Battery Anode and Cathodes by LIBS and LA-ICPMS, Ross Coenen, Elemental Scientific, Inc., 7272 World Communications Dr, Omaha NE 68122, ross.coenen@icpms.com; C. Derrick Quarles Jr., Josh Stone, Ciaran O'Connor, Lisa Bake, Uwe Karst

4:40 S17 Automated and Accurate Detection of Nanoparticles in Pure Semiconductor Chemicals, Austin Schultz, Elemental Scientific, Inc., 7277 World Communications Dr, Omaha NE 68122, austin@icpms.com, Dan Wiederin, C. Derrick Quarles Jr.

5:00 S18 Driving the Detection Limits Down to the PPQ Level for Pure Semiconductor Chemicals, Mason Spilinek, Elemental Scientific, Inc., 7277 World Communications Dr, Omaha NE 68122, mason.spilinek@icpms.com; Austin Schultz, Dan Wiederin, C. Derrick Quarles Jr.

5:20 S19 Elemental Analysis in Microplastics by ICP-QQQ-MS with Automated Micro-Flow Sample Introduction, Yan Cheung, Agilent Technologies, 201 Hansen Ct, Suite 108, Wood Dale IL 60191, yan.cheung@agilent.com; Emmett Soffey



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