



presents:

**The 62nd International
Conference on
Analytical Sciences and
Spectroscopy**

June 11-14, 2018



ICASS 2018

Final Program



Toronto Airport Marriott Hotel

901 Dixon Road, Etobicoke, Ontario, Canada

MONDAY, JUNE 11, MORNING

8:00-9:00 Breakfast (provided)

Plenary Session

Co-Chairs: Marc Lamoureux (CSASS President) and Diane Beauchemin (ICASS Chair)

- 9:00 Conference opening. Diane Beauchemin
- 9:10 Gerhard Herzberg Award presentation. Marc Lamoureux
- 9:20 **(I107)** A JOURNEY WITH INDUCTIVELY COUPLED PLASMA SPECTROMETRY: A BEAUTIFUL ROAD (UN BEAU CHEMIN). **D. Beauchemin**, Queen's University, Department of Chemistry, 90 Bader Lane, Kingston, ON K7L 3N6, Canada
- 10:00 Refreshment break
- 10:40 Glass Expansion Graduate Student Travel Award presentation. Ken McGuinness on behalf of Glass Expansion
(I032) SURFACE LEAD QUANTIFICATION OF FORENSIC FIRING RANGES USING ICP-MS. **L. Huang**¹, D. Beauchemin¹, C. Dalpé², ¹Queen's University, Kingston, ON, Canada; ²Royal Canadian Mounted Police, Ottawa, ON, Canada
- 11:20 Opening of the Environmental Analysis symposium. **Organizers:** Taddese Godeto and Teresa Switzer; **Chair:** Teresa Switzer
(I062) TRANSITION FROM ANALOGUE TO DIGITAL QUANTIFICATION IN MASS SPECTROMETRY FOR THE 21ST CENTURY, APPLIED IN EXPOSOMICS. **H. M. "Skip" Kingston**, Duquesne University
- 12:00 Exhibition opening – Hot buffet lunch provided - *Salon DE*

MONDAY, JUNE 11, AFTERNOON

Environmental analysis I

Organizers: Taddese Godeto and Teresa Switzer; **Chair:** Taddese Godeto

- 13:20 **(I053) Keynote lecture:** ELEMENTAL HYPERACCUMULTION IN MACROFUNGI – A CLOSER LOOK TO ARSENIC. **Walter Goessler** and Simone Braeuer. University of Graz, Graz, Austria
- 14:00 **(I087)** DEALING WITH DIFFICULT SIBLINGS: HEXAVALENT CHROMIUM - TRIVALENT CHROMIUM. ONE IS A CARCINOGEN AND THE OTHER IS A COVETED NUTRIENT. LESSONS LEARNED OVER THE PAST 3 DECADES. **Matt Pamuku**, Applied Isotope Technologies, Inc.
- 14:40 **(I012)** COMPOUND SPECIFIC CHARACTERIZATION OF NAFCs IN LABORATORY CONSTRUCTED WETLANDS BY GCxGC-HRMS. **Sophia A. Schreckenbach**¹, David T. Bowman¹, Eric J. Reiner¹, Ralph Ruffolo¹, Dena W. McMartin², Chukwuemeka Ajaero³, John V. Headley³, Kerry M. Peru³, G. O'Sullivan⁴ and Karl J. Jobst¹, ¹Ontario Ministry of Environment and Climate Change, Etobicoke, ON; ²University of Saskatchewan, Saskatoon, SK; ³Environment and Climate Change Canada, Saskatoon, SK; ⁴Mount Royal University, Calgary, AB.
- 15:00 Refreshment break, exhibition and posters – *Salon DE*

- 15:40 (I004) MICROPLASTICS ANALYSIS IN ENVIRONMENTAL SAMPLES USING FT-IR IMAGING. **Marc-André Gagnon**, Agilent Technologies
- 16:20 (I010) ATR-FTIR STUDIES ON THE INITIAL BINDING KINETICS OF ARSENICALS AT THE ORGANIC-HEMATITE INTERFACE. **Mohammad Aminur Rahman**, Arthur Situm and Hind A. Al-Abadleh, Wilfrid Laurier University, Waterloo, ON, Canada
- 16:40 (I011) USING ATR-FTIR SPECTROSCOPY FOR DETERMINING ACTIVATION ENERGY OF ADSORPTION ON HEMATITE NANOPARTICLES. **Sara Soldooy** and Hind A. Al-Abadleh, Wilfrid Laurier University, Waterloo, ON, Canada
- 17:00 POSTER SESSION – *Salon DE*

Nano-bio-materials for sensing and biosensing applications

Organizer and Chair: Sahar Mahshid

- 13:00 (I077) NOVEL INEXPENSIVE PLASMONIC SENSORS. **Sebastian Wachsmann-Hogiu**, McGill University, Montreal, QC, Canada.
- 13:40 (I064) PRE-CONCENTRATION BY LIQUID INTAKE BY PAPER (P-CLIP): A NEW TECHNIQUE FOR LARGE VOLUMES AND DIGITAL MICROFLUIDICS. **Darius G. Rackus**, Richard P.S. de Campos, Calvin Chan, Maria M. Karcz, Brendon Seale, Tanya Narahari, Christopher Dixon, M. Dean Chamberlain, and Aaron R. Wheeler, University of Toronto, Toronto, Canada.
- 14:00 (I065) NATURAL MELANIN PIGMENTS AND THEIR INTERFACES WITH METAL IONS AND OXIDES: EMERGING CONCEPTS AND TECHNOLOGIES. **Clara Santato**, Engineering Physics, Polytechnique Montréal, Montréal, QC, Canada.
- 14:40 (I092) QUANTITATIVE ASSESSMENT OF METHYLALONIC ACID USING FULLY AUTOMATED DIRECT ISOTOPE DILUTION MASS SPECTROMETRY ON BLOOD CARDS. **Jeremiah Jamrom**¹, Logan Miller¹, Scott Faber², Matt Pamuku³, Fredrick D. Foster⁴, H. M. “Skip” Kingston¹, ¹Department of Chemistry and Biochemistry, Duquesne University, USA; ²The Children’s Institute, Pittsburgh, PA, USA; ³Applied Isotope Technologies, Pittsburgh, PA; USA and Germany GERSTEL, Inc.701 Digital Drive; ⁴Suite J., Linthicum, MD, USA.
- 15:00 Refreshment break, exhibition and posters – *Salon DE*
- 15:20 (I047) INTEGRATED BIO/NANO LAB-ON-CHIP DEVICES FOR DIAGNOSTICS AND GENOMICS. **Sara Mahshid**, McGill University, Montreal, QC, Canada
- 16:00 (I033) INTEGRATION OF ELECTROCHEMICAL SENSORS WITH DIGITAL MICROFLUIDIC DEVICES AND POTENTIAL APPLICATIONS. **Richard P. S. de Campos**; Darius G. Rackus and Aaron R. Wheeler. University of Toronto, Toronto, ON, Canada.
- 16:40 (I061) ELECTROCHEMICAL BIO-NANO-SENSORS FOR MOLECULAR DETECTION AT THE POINT-OF-NEED. **Sahar Sadat Mahshid**, University of Toronto, Toronto, Canada
- 17:00 POSTER SESSION – *Salon DE*

Sample introduction systems for the inductively coupled plasma

Organizers: Ahmed Al Hejami and Diane Beauchemin; **Chair:** Ahmed Al Hejami

- 13:40 **(I044)** ACHIEVING ACCURACY IN ELEMENTAL ANALYSIS THROUGH ICP-SPECTROCHEMISTRY. **José-Luis Todolí** and Raquel Sánchez, University of Alicante, Alicante, Spain
- 14:20 **(I002)** TOWARDS TAKING PART OF THE LAB TO THE SAMPLE: FROM LAB-SCALE ICPs TO BATTERY-OPERATED MICROPLASMAS-ON-CHIPS. **Vassili Karanassios**, University of Waterloo, Waterloo, Canada
- 15:00 Refreshment break, exhibition and posters – *Salon DE*
- 15:40 **(I067)** ELECTROTHERMAL VAPORIZATION AS A VERSATILE SAMPLE INTRODUCTION TECHNIQUE FOR INDUCTIVELY COUPLED PLASMA SPECTROMETRY. **Bin Hu**, Wuhan University, Wuhan, China
- 16:20 **(I040)** USE OF A TOTAL SAMPLE CONSUMPTION SYSTEM FOR THE ELEMENTAL AND ISOTOPIC ANALYSIS OF BIOETHANOL. **Carlos Sánchez**¹, Eduardo Bolea-Fernández², Marta Costas-Rodríguez², Charles-Philippe Lienemann³, Frank Vanhaecke², José Luis Todolí¹, ¹University of Alicante, Alicante, Spain; ²Ghent University, Ghent, Belgium; ³IFP Energies Nouvelles, Solaize, France.
- 16:40 **(I083)** A COMPARATIVE STUDY OF DIFFERENT APPROACHES USING A NEBULIZATION/PRE-EVAPORATION SYSTEM AND MIXED-GAS (AR-N₂ AND AR-H₂) PLASMAS FOR IMPROVING SOLID SAMPLING ETV-ICPOES. **Ahmed Al Hejami** and Diane Beauchemin, Queen's University, Kingston, ON, Canada.
- 17:00 POSTER SESSION – *Salon DE*

Posters 17:00-18:00 *Salon DE*

Reception with hors d'oeuvres as well as alcoholic and non-alcoholic punches sponsored by **PerkinElmer and Analytical**

Poster number	Presentation
1	(I038) NON-TARGETED SCREENING AND IDENTIFICATION OF ORGANIC CONTAMINANTS IN HONEY USING HPLC-QTOF-MS/MS. Annie von Eyken and Stéphane Bayen. McGill University, QC, Canada.
2	(I052) INVESTIGATING THE EFFECT OF DENATURATION ON PEPTIDE MAPPING USING GLUTARALDEHYDE IMMOBILIZED LYSINE-C TO DIGEST BOVINE SERUM ALBUMIN. Esra Al-Abduljabar, Kaeden Teindl and Golfam Ghafourifar. University of the Fraser Valley Abbotsford, BC, Canada.
3	(I095) DEVELOPING A DOUBLE SPIKE METHOD FOR HIGH-PRECISION ISOTOPE RATIO MEASUREMENT OF MERCURY. Fathima Usama and Holger Hintelmann. Trent University, Peterborough, ON, Canada.
4	(I096) CHARACTERIZATION OF GOLD NANOPARTICLES BY MIXED-GAS PLASMA SINGLE PARTICLE ICP-MS, Joshua Kofsky and Diane Beauchemin, Queen's University, Kingston, ON, Canada.
5	(I097) EFFECT OF FLOW INJECTION VOLUME ON SPECTROSCOPIC INTERFERENCES IN INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY. Alastair Kierulf and Diane Beauchemin, Queen's

University, Kingston, ON, Canada

- 6 (I098) DETERMINATION OF POTENTIALLY TOXIC ELEMENTS IN PHARMACEUTICALS AND HEALTH SUPPLEMENTS BY ELECTROTHERMAL VAPORISATION COUPLED TO ICPOES. **Calvin Palmer** and Diane Beauchemin, Queen's University, Kingston, ON, Canada
- 7 (I099) ADAPTATION OF A CONVENTIONAL ACID DIGESTION PROCEDURE FOR TRACE MULTI-ELEMENT ANALYSIS IN VEGETATION. **Katie Moghadam** and Diane Beauchemin, Queen's University, Kingston, ON, Canada.
- 8 (I100) AIR-SANDWICH FLOW INJECTION FOR THE ANALYSIS OF GOLD NANOPARTICLES BY SINGLE PARTICLE ICPMS. **Andrew Williams** and Diane Beauchemin, Queen's University, Kingston, ON, Canada.
- 9 (I008) THE ANALYSIS OF DRINKING WATERS USING THE NEXION® 1000 ICP-MS AND UNIVERSAL, COLLISION-REACTION GAS TECHNOLOGY. **Eve Kroukamp** and Pritesh Patel, PerkinElmer Inc., Woodbridge, ON, Canada
- 10 (I069) MEASUREMENT OF STABLE ISOTOPE 41K/39K RATIOS BY MC-ICP-MS. Nicholas S. Lloyd¹, Grant Craig¹, M. Paul Field², Paul Watson², Leah E. Morgan³, Danielle Santiago Ramos⁴ and John A. Higgins⁴, ¹Thermo Fisher Scientific (Bremen) GmbH, Germany; ²Elemental Scientific Inc., USA; ³USGS Denver, USA, ⁴Princeton University, USA. Presented by **Peter Stow**.

TUESDAY, JUNE 12, MORNING

Environmental analysis II

Organizers and co-Chairs: Taddese Godeto and Teresa Switzer

- 8:00 Breakfast (provided) – *Salon DE*
- 8:40 (I006) ENVIRONMENTAL ANALYSIS OF MODEL ATMOSPHERICALLY-RELEVANT MULTICOMPONENT AEROSOL SYSTEMS. **Hind A. Al-Abadleh**, Wilfrid Laurier University, Waterloo, ON, Canada.
- 9:20 (I005) EFFECT OF SULFATE AND OXALATE ON THE FORMATION OF LIGHT ABSORBING POLYMERIC NANOPARTICLES FROM THE REACTION OF SOLUBLE IRON(III) WITH AROMATIC AND ALIPHATIC PRECOURSES. Hind Al-Abadleh and **Aseel Al-Nimer**, Wilfrid Laurier University, Waterloo, Canada.
- 9:40 (I016) PHOSPHORUS SPECIATION AND ISOTOPE DILUTION MEASUREMENT OF PHOSPHATE IN SURFACE WATER. **Vlastimil Packa**^{1,2}, Vadim Bostan², Ngan Diep¹, Todd Howell¹, Stefanie Maedler¹, Robert Tooley¹ and Vasile I. Furdui^{1,2}, ¹Ontario Ministry of the Environment and Climate Change, Toronto, ON, Canada; ²Ryerson University, Toronto, ON, Canada
- 10:00 Refreshment break and exhibition – *Salon DE*
- 10:40 (I013) 50 YEARS OF MONITORING MERCURY IN ONTARIO FISH. **Satyendra Bhavsar**, Ontario Ministry of the Environment and Climate Change

- 11:20 **(I019)** TESTING RUGGEDNESS / ROBUSTNESS OF ANALYTICAL METHODS DURING METHOD DEVELOPMENT. **Moustapha Oke**, Godlove Ngwa and Erik Wiersma. Ontario Ministry of the Environment and Climate Change
- 11:40 **(I104)** INTERACTIONS OF MODEL CRUDE OIL COMPONENTS WITH CALCIUM CARBONATE SURFACES. **Brittany Duhamel**, Laurentian University, Department of Chemistry, Sudbury, ON, Canada.
- 12:00 Hot buffet lunch (provided) – *Salon DE*

Forensic analysis

Organizers: Lily Huang and Diane Beauchemin; **Chair:** Lily Huang

- 8:00 Breakfast (provided) – *Salon DE*
- 9:00 **(I014)** GEOGRAPHIC SOURCING OF HEROIN SAMPLES USING ELEMENTAL AND STRONTIUM ISOTOPE RATIO DATA. **Sarah C. Jantzi**¹, Joshua Debord¹, Ali Pourmand², Sini Panicker³ and Jose Almirall¹, Florida International University, Miami, FL, USA; ²University of Miami, Miami, FL, USA; ³, US DEA, Dulles, VA, USA.
- 9:40 **(I007)** DEVELOPMENT OF NOVEL SOLID PHASE MICROEXTRACTION-TRANSMISSION MODE (SPME-TM) DEVICES AND ITS APPLICATION TO THE QUALITATIVE/QUANTITATIVE ANALYSIS OF COMPLEX MATRICES VIA DIRECT ANALYSIS IN REAL TIME (DART)-MASS SPECTROMETRY (MS). **Tijana Vasiljevic**¹, German Augusto Gomez-Rios¹, Emanuela Gionfriddo² and Janusz Pawliszyn¹, ¹University of Waterloo, Waterloo, ON, Canada; ²University of Toledo, Toledo, OH, USA
- 10:00 Refreshment break and exhibition – *Salon DE*
- 10:40 **(I079)** USE OF ICP SPECTROMETRY FOR MULTI-ELEMENTAL ANALYSIS OF SOLDER FOR APPLICATIONS IN FORENSIC SCIENCE. **Margaret MacConnachie** and Diane Beauchemin, Queen's University, Department of Chemistry, Kingston, ON, Canada
- 11:00 **(I024)** FORENSIC ANALYSIS OF NAIL CLIPPINGS BY ELECTROTHERMAL VAPORIZATION COUPLED TO INDUCTIVELY COUPLED PLASMA OPTICAL EMISSION SPECTROMETRY IN AN ATTEMPT TO IDENTIFY GENDER. **Andrew Schug** and Diane Beauchemin, Queen's University, Department of Chemistry, Kingston, ON, Canada
- 11:20 **(I105)** ANALYSIS OF HEAD HAIR BY ELECTROTHERMAL VAPORIZATION COUPLED TO INDUCTIVELY COUPLED PLASMA OPTICAL EMISSION SPECTROMETRY TO RESCUE HISTORY. Lily Huang, Andrew Schug and **Diane Beauchemin**, Queen's University, Department of Chemistry, Kingston, ON, Canada
- 11:40 **(I103)** MICROPLASTICS ANALYSIS BY FOURIER TRANSFORM INFRARED SPECTROSCOPY (FTIR) AND HIGH RESOLUTION MS – LESSONS LEARNED FROM SPILL INVESTIGATIONS. **Alina Sims**, Xianming Zhang, Karl Jobst and Paul Helm, Ontario Ministry of the Environment and Climate Change, Etobicoke, ON, Canada
- 12:00 Hot buffet lunch (provided) – *Salon DE*

LIBS (laser induced breakdown spectroscopy) applications

Organizer and Chair: Aïssa Harhira

- 8:00 Breakfast (provided) – *Salon DE*
- 9:00 **(I050)** A LOOK AT LIBS AND ITS DEVELOPMENT AS AN ANALYTICAL TOOL. **M. Sabsabi**, P. Bouchard, A. Harhira, J. El Haddad, E. Soares de Lima Filho, F. Vanier, A. Moreau and A. Blouin. National Research Council Canada, Boucherville, QC, Canada
- 9:40 **(I058)** THE ANALYSIS OF VOLCANIC BRINES BY FREEZING STAGE TANDEM LIBS/LAICPMS. **Kim Berlo**¹, Vincent van Hinsberg¹ and Jhanis Gonzalez^{2,3}, ¹McGill University, Montreal, Canada; ²Applied Spectra Inc., Fremont, CA, USA; ³Lawrence Berkeley National Laboratory, Berkeley, CA, USA
- 10:00 Refreshment break and exhibition – *Salon DE*
- 10:40 **(I026)** USING LIBS ANALYZER FOR LASER-BASED SOIL ANALYSIS FOR PRECISION AGRICULTURE. **C. L. Goueguel**, K. McMeekin, N. Basque, A. Soumare, C. Nault, and J. Nault, LogiAg Inc., Boucherville, QC, Canada
- 11:00 **(I066)** LOOKING FOR LIBS SIGNATURES OF CANCERS AND OF LIFE ON MARS: PROGRESS AND CHALLENGES. **Noureddine Melikechi**, University of Massachusetts, Lowell, MA, USA
- 11:40 **(I102)** LASER-INDUCED BREAKDOWN SPECTROSCOPY (LIBS) FOR GOLD-BEARING MINERALS ANALYSES. **A. Harhira**, P. Bouchard, J. El Haddad, M. Sabsabi and A. Blouin. National Research Council Canada, Boucherville, QC, Canada
- 12:00 Hot buffet lunch (provided) – *Salon DE*

TUESDAY, JUNE 12, AFTERNOON

Innovations from manufacturers

Organizer and Chair: Diane Beauchemin

- 13:20 **(I059)** VIBRATIONAL SPECTROSCOPY IN ENVIRONMENTAL AND FORENSIC ANALYSIS – FROM OPEN PATH TO MICRO/NANO SAMPLING. **Peter Krygsman**, Bruker Ltd., Milton, ON, Canada.
- 13:40 **(I085)** AUTOMATED ICP SAMPLE PREPARATION. **Jose Varghese**, SCP SCIENCE, Baie d'Urfé, QC, Canada
- 14:00 **(I070)** A NEW TECHNOLOGY, ENERGIZED DISPERSIVE GUIDED EXTRACTION, FOR RAPID, SIMPLE, AND EFFICIENT SAMPLE PREPARATION. Candice Olsson, Brittany A. Leffler, and Alicia D. Stell - CEM Corporation. CEM Corporation. Presented by **Andrew Rings**.
- 14:20 **(I075)** TOUGH SAMPLES? TOUGHER SOLUTIONS THROUGH MICROWAVE SAMPLE PREPARATION! **Parag Bhargava** and Clayton Babcock, ATS Scientific Inc., Burlington, ON, Canada
- 14:40 **(I084)** IMPROVED ICP PERFORMANCE OF HIGH-SOLIDS SAMPLES: INCREASE PRECISION AND DECREASE DOWNTIME. **Ryan Brennan**, Glass Expansion Inc.
- 15:00 Refreshment break, exhibition and non-student posters
- 15:40 **(I041)** THE NEW AVIO 500 ICP-OES – EXPAND YOUR RANGE AND EXTEND YOUR RESOURCES. **Andrew Rams**. PerkinElmer Inc., Woodbridge, ON, Canada.

- 16:00 **(I074)** ANALYSIS OF HIGH PURITY COPPER USING ETV-ICP-OES WITH AXIAL PLASMA OBSERVATION, Dion Tsourides, Spectro Analytical Instruments Inc. Presented by **Willi Barger**.
- 16:20 **(I023)** ADVANCES IN THE ACCURATE DETERMINATION OF RARE EARTH ELEMENTS BY ICP-MS. **Pamela Wee**, Agilent Technologies Canada Inc.
- 16:40 **(I042)** ADVANCES IN TRIPLE QUADRUPOLE ICP-MS FOR ROUTINE APPLICATIONS REQUIRING TRACE ELEMENTAL ANALYSIS. Jeffrey Bown¹ and Daniel Kutscher², ¹Thermo Fisher Scientific, Bannockburn, IL, USA; ²Thermo Fisher Scientific, Bremen, Germany. Presented by **Craig Seeley**.
- 17:00 End of session
- 18:00 Banquet and magic show – **ticket required**
- 18:00 Reception with hors d'oeuvres as well as alcoholic and non-alcoholic punches featuring close-up magic by Dick Joiner, sponsored by **Glass Expansion**
- 19:00 Plated dinner (place your ticket in front of your plate) with stage magic show by Dick Joiner during dessert.

Industrial applications

Organizers: Robert Teuma-Castelletti and Diane Beauchemin **Chair:** Robert Teuma-Castelletti

- 13:20 **(I025)** RESEARCH ON AND APPLICATION OF CANNABIS ANALYSIS: A DECADES LONG PERSPECTIVE. **Jack Rosenfeld**^{1,2} and Rob Deakin,² ¹McMaster University, Department of Pathology and Molecular Medicine, Hamilton, ON, Canada; ²Activation Laboratories Ltd, Ancaster, ON, Canada.
- 14:00 **(I076)** ICP-MS DETERMINATION OF TRACE SELENIUM IN BIOLOGICALLY TREATED FLUE GAS DESULFURIZATION WASTEWATER. **Chaoyang Huang** and Young Chul Choi, Southern Research Institute, Cartersville, GA, USA
- 14:40 **(I089)** MICROWAVE-ASSISTED ACID DIGESTION FOR THE DETERMINATION OF Al, Cr, Fe, Mg AND Si IN CHROMITE SAMPLES BY ICP-OES. **Ruiping Wang** and Duane Palmer, CanmetMINING, Natural Resources Canada, Ottawa, ON, Canada
- 15:00 Refreshment break, exhibition and non-student posters
- 15:40 **(I093)** THE KRAGTEN APPROACH TO THE MEASUREMENT OF UNCERTAINTIES IN VARIOUS ANALYTICAL METHODS. **Marc Lamoureux**, Saint Mary's University, Halifax, NS, Canada.
- 16:00 **(I060)** METROLOGICAL TRACEABILITY IN LABORATORIES ACCREDITED TO ISO/IEC 17025:2017. **Edgar F. Paski**, Analytical Innovations, North Vancouver, BC, Canada
- 16:20 **(I021)** APPLICATION OF FOURIER TRANSFORM INFRARED SPECTROSCOPY (FTIR) TO CHARACTERIZATION OF PETROLEUM CONTAINING MATERIALS. **Alina Sims**¹ and Gelu Vasiliu², ¹Ontario Ministry of the Environment and Climate Change, Etobicoke, ON, Canada; ²Ontario Ministry of Transportation, Toronto, ON, Canada
- 17:00 End of session
- 18:00 Banquet and magic show – **ticket required**

- 18:00 Reception with hors d'oeuvres as well as alcoholic and non-alcoholic punches featuring close-up magic by Dick Joiner, sponsored by **Glass Expansion**
- 19:00 Plated dinner (place your ticket in front of your plate) with stage magic show by Dick Joiner during dessert.

Speciation analysis

Organizers: Randa Althobiti and Diane Beauchemin; **Chair:** Randa Althobiti

- 13:00 (**I003**) COMPARATIVE FATE OF Cd AND Hg SPECIES IN ERYTHROCYTE CYTOSOL. **Jürgen Gailer**¹, Sophia Sarpong-Kumankomah¹, Matthew A. Gibson¹, S. Nehzati² and G.N. George², ¹University of Calgary, Calgary, AB, Canada; ²University of Saskatchewan, SK, Canada
- 13:40 (**I090**) DETERMINATION OF HEXAVALENT CHROMIUM IN DIETARY SUPPLEMENTS. **James Henderson**¹, Lauren Stubbart¹, Weier Hao¹, Logan Miller¹, Matt Pamuku², Larry Tucker³, Diego Cortesi⁴ and H. M. Skip Kingston¹, ¹Duquesne University, Pittsburgh, PA, USA; ²Applied Isotope Technologies Company, Pittsburgh, PA, USA; ³Metrohm USA, Inc., Riverview, FL, USA; ⁴Milestone SLR, Bergamo, Italy
- 14:00 (**I088**) ARSENIC SPECIATION IN CERTIFIED REFERENCE MATERIALS. **Zoltan Mester**¹, Phuong-Mai Le¹, Jianfu Ding¹, Donald M. Leek¹, Juris Meija¹, Gilles Robertson¹, Anthony Windust¹ and Tomas Matousek², ¹National Research Council Canada, Ottawa, Canada; ²The Czech Academy of Sciences, Brno, Czech Republic
- 14:40 (**I009**) ARSENIC SPECIATION, ITS PAST, PRESENT AND FUTURE. **Eve Kroukamp**. PerkinElmer Inc., Woodbridge, ON, Canada
- 15:00 Refreshment break, exhibition and non-student posters
- 15:20 (**I036**) CHEMICAL SPECIATION INFLUENCING THE BIOACCESSIBILITY OF ARSENIC FROM GOLD MINE TAILINGS. **L. Meunier**¹, S.R. Walker¹, J. Wragg⁴, M.B. Parsons², H.E. Jamieson¹, I. Koch³, K.J. Reimer³. ¹Queen's University, Kingston, ON; ²Natural Resources Canada, Dartmouth, NS; ³Royal Military College of Canada, Kingston, ON; ⁴British Geological Survey, Nottingham, UK
- 15:40 (**I054**) HOMOARSENOCOLINE IN MUSHROOMS. **Simone Braeuer**¹, Toma Glasnow¹, Gema Guedes de la Cruz¹, Kenneth B. Jensen¹, Walter Goessler¹ and Jan Borovička², ¹University of Graz, Graz, Austria; ²Czech Academy of Sciences, Prague, Czech Republic.
- 16:00 (**I072**) FORMATION OF NON-TOXIC ARSENOBETAINE. **Iris Koch**, Blaire Coffey, Gregory Garber, David Patch, Jessica Henry, Michelle M. Nearing, Jennifer Scott and Kenneth J. Reimer, Royal Military College of Canada, Kingston, ON, Canada.
- 16:40 (**I068**) SELENIUM SPECIATION ANALYSIS AND APPLICATIONS OF ISOTOPE DILUTION MASS SPECTROMETRY. **Kelly L. LeBlanc**¹, Mayumi S. Kawamoto^{1,2}, Phuong-Mai Le¹, Jianfu Ding¹, Enea Pagliano¹, Kenny Nadeau¹, Patricia Grinberg¹, Lu Yang¹, Ana Rita de Araújo Nogueira² and Zoltán Mester¹, ¹National Research Council Canada, Ottawa, ON, Canada; ²Universidade de São Paulo; São Carlos, São Paulo, Brazil
- 17:00 End of session

18:00 Banquet and magic show – **ticket required**

18:00 Reception with hors d'oeuvres as well as alcoholic and non-alcoholic punches featuring close-up magic by Dick Joiner, sponsored by **Glass Expansion**

19:00 Plated dinner (place your ticket in front of your plate) with stage magic show by Dick Joiner during dessert.

WEDNESDAY, JUNE 13, MORNING

Agricultural and food safety I

Organizers: Alastair Kierulf and Diane Beauchemin; **Chair:** Alastair Kierulf

8:00 Breakfast (provided)

9:00 **(I086)** USING ELEMENTAL PROFILING TO ESTABLISH AUTHENTICITY OF FOOD AND BEVERAGES. Jenny Nelson¹⁻³, Courtney Tanabe^{2,3}, Roger Boulton², Susan E. Ebeler^{2,3}, Helene Hopfer⁴, **Pam Wee**⁵, ¹Agilent, Inc., Santa Clara, CA, United States. ²Dept of Viticulture and Enology, University of California, Davis, CA, United States. ³Food Safety and Measurement Facility, University of California, Davis, CA, United States. ⁴Dept of Food Science, The Pennsylvania State University, University Park, PA, United States. ⁵Agilent, Inc., Toronto, ON, Canada

9:40 **(I078)** MULTIELEMENTS ANALYSIS OF NATURAL TOOTHBRUSH: ASSESSMENT OF POTENTIAL HEALTH RISK IN SAUDI ARABIA USING CONTINUOUS ON-LINE LEACHING AND INDUCTIVELY PLASMA MASS SPECTROMETRY. **Randa Althobiti** and Diane Beauchemin, Queen's University, Kingston, ON, Canada

10:00 Refreshment break and exhibition

10:40 **(I071)** ANALYSIS OF ARSENIC AND OTHER TRACE ELEMENTS IN FOODS. **Brian P. Jackson** and Tracy Punshon, Dartmouth College, Hanover, NH, USA

11:20 **(I049)** “NOT YOUR KID’S APPLE JUICE”: AN EXAMINATION OF ARSENIC CONTENT IN AMERICAN AND EUROPEAN HARD CIDERS. Patricia L. Atkins¹ and Elaine Hasty², ¹SPEX CertiPrep, Metuchen, N.J., USA; ²CEM Corporation, Matthews, NC, USA. Presented by **Jessica Giles**.

11:40 **(I080)** DEVELOPMENT OF A METHOD FOR DETERMINATION OF FLUORINE IN TEA LEAVES USING ETV-ICP-OES. **Patricia Maung** and Diane Beauchemin, Queen's University, Kingston, ON, Canada

12:00 CSASS AGM and hot buffet lunch (provided) – *Salon DE*

Environmental analysis III

Organizers: Taddese Godeto and Teresa Switzer; **Chair:** Teresa Switzer

8:00 Breakfast (provided)

8:40 **(I082)** RECENT ADVANCES IN ENVIRONMENTALLY FOCUSED MORPHOLOGIES OF SOLID PHASE MICROEXTRACTION (SPME). **Jonathan J. Grandy**, University of Waterloo, Waterloo, ON, Canada

9:20 **(I081)** MICRO-FLUIDICS AND NANO-FLUIDICS FOR SPECTROCHEMICAL ANALYSIS IN THE FIELD. **Vassili Karanassios**, University of Waterloo, Waterloo, ON, Canada

- 9:40 **(I037)** AIR MONITORING OF FINE PARTICULATE MATTER AND ASSOCIATED ELEMENTS IN THE RING OF FIRE AREA IN ONTARIO, CANADA. **Yushan Su**¹, Tony Munoz¹, Ewa Dabek-Zlotorzynska² and Valbona Celso², ¹Ontario Ministry of the Environment and Climate Change, Toronto, ON, Canada; ²Environment and Climate Change Canada, Ottawa, ON, Canada.
- 10:00 Refreshment break and exhibition
- 10:20 **(I073)** ADVANCE IN CHEMICAL ANALYSIS AND THE CYCLING OF MERCURY IN THE ENVIRONMENT. **Julia Lu**, Department of Chemistry and Biology, Ryerson University
- 11:00 **(I017)** ANALYTICAL BENEFITS AND CHALLENGES OF DETERMINING MERCURY IN FISH BY TD-CV-AFS. **Taddese Godeto**, Paul Hubber, Ram Prashad, Peter Drouin and Teresa Switzer. Ministry of the Environment and Climate Change, Toronto, Canada
- 11:20 **(I063)** THE DEVELOPMENT AND IMPLEMENTATION OF AN AUTOMATIC THERMOGRAVIMETRIC ANALYZER FOR THE DETERMINATION OF MOISTURE, TOTAL SOLIDS AND LOSS ON IGNITION DETERMINATIONS FOR VARIOUS ENVIRONMENTAL MATRICES. **Peter Drouin**, Nadya Sudakova, Lorenzo Ruiz and Teresa Switzer, Ontario Ministry of the Environment and Climate Change
- 11:40 **(I043)** QUANTIFICATION OF METAL AND NANOPARTICLE BIOUPTAKE AND DISTRIBUTION. **Ruth Merrifield**¹, Jamie Lead² and Chady Stephan¹, ¹PerkinElmer Inc, Woodbridge, ON, Canada; ²CENR, University South Carolina, Columbia, SC, USA
- 12:00 CSASS AGM and lunch (provided)

Separations

Organizer and Chair: Golfam Ghafourifar

- 8:00 Breakfast (provided)
- 9:00 **(I106)** CHARACTERIZATION OF AN HPLC STATIONARY PHASE COMPOSED OF INVERTIBLE AMPHIPHILIC MOLECULAR POCKETS. Vincent Dionne-Dumont, Meng Zhang, Julian X.X. Zhu and **Karen C. Waldron**. Université de Montréal, Department of Chemistry, CP 6128, Succ. Centre-ville, Montreal, QC H3C 3J7, Canada
- 9:40 **(I028)** IMPROVEMENT OF ROBUSTNESS AND ENZYMATIC ACTIVITY OF GLUTARALDEHYD-CROSSLINKED PROTEOLYTIC ENZYMES FOR PEPTIDE MAPPING BY CAPILLARY ELECTROPHORESIS. **Marie-Pier Ouellet**, Karen Waldron and Martin Girard, University of Montreal, Montreal, QC, Canada.
- 10:00 Refreshment break and exhibition
- 10:40 **(I057)** THE EFFECT OF CHANGING PARAMETERS TO IMPROVE THE PHYSICAL STRENGTH OF IMMOBILIZED ENZYME. **Kaeden Teindl**, Esra Al-Abduljabar and Golfam Ghafourifar, University of the Fraser Valley, Abbotsford, BC, Canada.
- 11:00 **(I055)** OPTIMIZATION OF LIQUID CHROMATOGRAPHIC METHODS FOR CHARACTERIZATION OF REGENERABLE AMINE SOLVENTS USED IN CO₂

- CAPTURE. **Stéphanie Gallant**, Alexandra Furtos and Karen C. Waldron. Université de Montréal, Montreal, QC, Canada.
- 11:20 **(I056)** DEVELOPMENT OF A METHOD FOR TRACE-LEVEL QUANTIFICATION OF NITROSAMINES IN WASTEWATER. **Anthony Lapointe**, Stéphanie Gallant, Karen C. Waldron and Alexandra Furtos. University of Montreal, Montreal, QC, Canada.
- 11:40 **(I027)** DEVELOPING AND OPTIMIZING IMMOBILIZED ENZYMES AS EVALUATED BY HPLC AND CAPILLARY ELECTROPHORETIC PEPTIDE MAPPING. **G. Ghafourifar**, University of the Fraser Valley, Abbotsford, BC, Canada.
- 12:00 CSASS AGM and lunch (provided)

WEDNESDAY, JUNE 13, AFTERNOON

Agricultural and food safety II

Organizers: Alastair Kierulf and Diane Beauchemin; **Chair:** Diane Beauchemin

- 13:40 **(I034)** ELEMENTAL ANALYSIS OF FOOD SAMPLES BY LASER ABLATION ICP-MS: CURRENT ADVANCEMENTS AND CHALLENGES **Todor I. Todorov**, Food and Drug Administration, College Park, MD, USA
- 14:20 **(I101)** SLURRY NEBULIZATION AND INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY WITH A MIXED-GAS PLASMA FOR THE ANALYSIS OF VEGETATION SAMPLES. **Robert Teuma-Castelletti** and Diane Beauchemin, Queen's University, Kingston, ON, Canada
- 14:40 **(I030)** ADVANTAGES OF INLINE DILUTION ON LC-ICP-MS BASED APPLICATIONS. C. Derrick Quarles Jr. and **Andrew Toms**, Elemental Scientific, Omaha, NE, USA
- 15:00 Refreshment break
- 15:40 **(I039)** CAN GOOD THINGS COME IN SMALL (PLASTIC) PACKAGES? – NON-TARGETED MULTIVARIATE COMPARISON OF HONEY IN GLASS AND PLASTIC JARS USING HPLC-QTOF-MS/MS. **Annie von Eyken**, Stéphane Bayen. McGill University, Sainte-Anne-de-Bellevue, QC, Canada
- 16:20 **(I031)** DEVELOPMENT AND VALIDATION OF A FULLY AUTOMATED HIGH THROUGHPUT METHOD FOR ANALYSIS OF MULTIRESIDUE VETERINARY DRUGS IN CHICKEN TISSUE USING SPME-LC-MS. **Abir Khaled**, Emanuela Gionfriddo, Vinicius Acquaro Junior, Varoon Singh and Janusz Pawliszyn, University of Waterloo, Waterloo, ON, Canada
- 16:40 **(I048)** NON-TARGETED SCREENING OF MALACHITE GREEN AND METABOLITES IN BROOK TROUT USING UHPLC-QTOF-MS. **Anca Baesu**¹, Céline Audet², and Stéphane Bayen¹, ¹McGill University; ²Université du Québec à Rimouski
- 17:00 End of the 62nd ICASS

Environmental analysis IV

Organizers: Taddese Godeto and Teresa Switzer; **Chair:** Taddese Godeto

- 13:40 **(I018)** ENVIRONMENTAL APPLICATIONS OF MERCURY STABLE ISOTOPES. **Bridget A. Bergquist**¹, Natalie Spoznar¹, Priyanka Chandan¹, David McLagan², Geoff Stupple³, Laura Zimmerman¹, Frank Wania², Carl Mitchell² and Alexandra Steffen³,
¹University of Toronto, Department of Earth Sciences; ²University of Toronto Scarborough, Department of Physical and Environmental Sciences; ³Environment and Climate Change Canada, Air Quality Research Division
- 14:20 **(I094)** MERCURY IN POLAR ENVIRONMENTS. **Holger Hintelmann**, Trent University, Peterborough, ON, Canada.
- 15:00 Refreshment break
- 15:20 **(I020)** SCREENING HALOGENATED ORGANIC CONTAMINANTS IN AQUATIC ENVIRONMENT USING PASSIVE SAMPLERS ANALYZED WITH GAS CHROMATOGRAPHY - HIGH RESOLUTION MASS SPECTROMETRY. **Xianming Zhang**^{1,2}, Karl Jobst¹, Paul Helm¹, Eric Reiner¹ and Ian Brindle², ¹ Ontario Ministry of the Environment and Climate Change, Etobicoke, ON, Canada; ² Brock University, St. Catharines, ON, Canada; ³ Hospital for Sick Children, Toronto, ON, Canada
- 15:40 **(I022)** “THE HISTORY OF MEN IS REFLECTED IN THE HISTORY OF SEWERS” VICTOR HUGO (1892); ROLE OF MASS SPECTROMETRY IN DETERMINATION OF MICRO- POLLUTANTS IN WASTEWATER: PAST, PRESENT AND FUTURE. **Mehran Alaei**. Environment and Climate Change Canada, Burlington, ON, Canada
- 16:20 **(I015)** APPLYING DIFFERENTIAL ION-MOBILITY SPECTROMETRY TO IMPROVE LC-MS/MS ANALYSIS OF EMERGING ORGANIC CONTAMINANTS. **Chunyan Hao**, Laboratory Services Branch, Ontario Ministry of the Environment and Climate Change
- 16:40 **(I035)** AN AUTOMATED NON-TARGETED METHOD FOR THE ANALYSIS OF MICROCYSTINS AND ANATOXIN-A BY TWO DIMENSIONAL LIQUID CHROMATOGRAPHY COUPLED TO QUADRUPOLE TIME-OF-FLIGHT MASS SPECTROMETRY. **Xavier Ortiz Almirall**, Karen MacPherson and Eric Reiner, Ontario Ministry of the Environment and Climate Change
- 17:00 End of the 62nd ICASS

Nanomaterials and their analysis

Organizers: Ram Lamsal and Diane Beauchemin; **Chair:** Ram Lamsal

- 13:40 **(I001)** ANALYTICAL INSIGHTS INTO EXPOSURE STUDIES OF NANOMATERIALS. **Petra Krystek**, Vrije Universiteit (VU), Amsterdam, The Netherlands
- 14:20 **(I046)** ICP-MS HIGH TEMPERATURE NANOPARTICLES CHARACTERIZATION. **José-Luis Todolí**¹, Águeda Cañabate¹, Esperanza García-Ruiz,^b Maite Aramendía², Diego Leite² and Martín Resano², ¹University of Alicante, Alicante, Spain; ²University of Zaragoza, Zaragoza, Spain.
- 14:40 **(I045)** EXPANDING THE CAPABILITIES OF SINGLE PARTICLE INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY FROM SINGLE-ANALYTE TO DUAL-ANALYTE. **Samad Bazargan**, Ruth Merrifield, Andrew

Rams, Chady Stephen, and Hamid Badiei, PerkinElmer Inc., Woodbridge, ON, Canada

15:00 Refreshment break

15:40 **(I051)** ONLINE MICRODROPLET STANDARD ADDITION FOR QUANTIFICATION OF DIVERSE NANOPARTICLES BY SINGLE-PARTICLE ICP-TOFMS. **Alexander Gundlach-Graham**¹, Lyndsey Hendriks¹, Kamyar Mehrabi¹, Benita Ramkorun-Schmidt² and Detlef Günther¹, ¹ETH Zurich, Zurich, Switzerland; ²BAM Federal Institute for Materials Research and Testing, Berlin, Germany

16:20 **(I029)** CHALLENGES OF ENVIRONMENTAL NANOPARTICLE ANALYSIS: SILVER NANOPARTICLES RELEASED FROM COMMERCIAL TEXTILES. **David Patch**¹, Anbareen Farooq¹, Vincent Gagnon¹, Iris Koch¹ Denis O'Carroll² and Kela Weber¹, ¹ Royal Military College of Canada, Kingston, ON, Canada; ²University of New South Wales, Sydney, Australia

16:40 **(I091)** CHARACTERIZATION AND STABILITY STUDY OF SYNTHETIC Pd NPs IN NEUTRAL AND ACIDIC MEDIA VIA SINGLE PARTICLE INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY FOR FUEL CELL APPLICATIONS. **Ram P. Lamsal**¹, Sadaf Tahamasebi¹, Stève Baranton², Christophe Coutanceau², Chady Stephan³, Gregory Jerkiewicz¹ and Diane Beauchemin¹, ¹Queen's University, Kingston, ON, Canada; ²Université de Poitiers IC2MP, Poitiers, France; ³Perkin Elmer Canada, Woodbridge, ON Canada

17:00 End of the 62nd ICASS