The 62nd International Conference on Analytical Sciences and Spectroscopy
June 11-14, 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. Huang1, 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 HYPERACCUMULATION 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. Schreckenbach1, 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 NANO PARTICLES. **Sara Soldoozy** 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, Brendan 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 Sánchez¹, 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 Canalytical

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<td>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.</td>
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<td>2 (I052)</td>
<td>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.</td>
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<td>3 (I095)</td>
<td>DEVELOPING A DOUBLE SPIKE METHOD FOR HIGH-PRECISION ISOTOPE RATIO MEASUREMENT OF MERCURY. Fathima Usama and Holger Hintelmann. Trent University, Peterborough, ON, Canada.</td>
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<tr>
<td>4 (I096)</td>
<td>CHARACTERIZATION OF GOLD NANOPARTICLES BY MIXED-GAS PLASMA SINGLE PARTICLE ICP-MS, Joshua Kofsky and Diane Beauchemin, Queen’s University, Kingston, ON, Canada.</td>
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<td>5 (I097)</td>
<td>EFFECT OF FLOW INJECTION VOLUME ON SPECTROSCOPIC INTERFERENCES IN INDUCTIVELY COUPLED PLASMA MASS SPECTROMETRY. Alastair Kierulf and Diane Beauchemin, Queen’s</td>
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University, Kingston, ON, Canada

6 (I098) DETERMINATION OF POTENTIALLY TOXIC ELEMENTS IN PHARMACEUTICALS AND HEALTH SUPPLEMENTS BY ELECTROTHERMAL VAPORIZATION COUPLED TO ICP-OES. 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 ICP-MS. 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

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 Packa¹,², Vadim Bostan², Ngan Diep¹, Todd Howell¹, Stefanie Maedler¹, Robert Tooley¹ and Vasile I. Furdui¹,², 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. Jantzi¹, 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 Vasiljevic¹, 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 SPECTROSCOPY 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


9:40 **(1058)** THE ANALYSIS OF VOLCANIC BRINES BY FREEZING STAGE TANDEM LIBS/LAICPMS. Kim Berlo¹, Vincent van Hinsberg¹ and Jhanis Gonzalez²,³ 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 **(1026)** 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 **(1066)** LOOKING FOR LIBS SIGNATURES OF CANCERS AND OF LIFE ON MARS: PROGRESS AND CHALLENGES. Noureddine Melikechi, University of Massachusetts, Lowell, MA, USA


12:00 Hot buffet lunch (provided) – Salon DE

TUESDAY, JUNE 12, AFTERNOON

Innovations from manufacturers

Organizer and Chair: Diane Beauchemin


13:40 **(1085)** AUTOMATED ICP SAMPLE PREPARATION. Jose Varghese, SCP SCIENCE, Baie d’Urfé, QC, Canada

14:00 **(1070)** 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 **(1075)** TOUGH SAMPLES? TOUGHER SOLUTIONS THROUGH MICROWAVE SAMPLE PREPARATION! Parag Bhargava and Clayton Babcock, ATS Scientific Inc., Burlington, ON, Canada


15:00 Refreshment break, exhibition and non-student posters

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 Rosenfeld¹,² 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 Sims¹ 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 Gailer1, 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 HEXA VALENT CHROMIUM IN DIETARY SUPPLEMENTS. James Henderson1, Lauren Stubbert1, 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 Mester1, 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. Meunier1, 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) HOMOARSENOCHOLINE IN MUSHROOMS. Simone Braeuer1, 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. Blair 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. LeBlanc1, Mayumi S. Kawamoto1,2, Phuong-Mai Le1, Jianfu Ding1, Enea Pagliano1, Kenny Nadeau1, Patricia Grinberg1, Lu Yang1, Ana Rita de Araújo Nogueira5 and Zoltán Mester1, 1National Research Council Canada, Ottawa, 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 Nelson\textsuperscript{1,3}, Courtney Tanabe\textsuperscript{2,3}, Roger Boulton\textsuperscript{2},
   Susan E. Ebeler\textsuperscript{2,3}, Helene Hopfer\textsuperscript{4}, \textbf{Pam Wee}\textsuperscript{5}, \textsuperscript{1}Agilent, Inc., Santa Clara, CA,
   United States. \textsuperscript{2}Dept of Viticulture and Enology, University of California, Davis, CA, United States.
   \textsuperscript{3}Food Safety and Measurement Facility, University of California, Davis, CA, United States.
   \textsuperscript{4}Dept of Food Science, The Pennsylvania State University, University Park, PA, United States.
   \textsuperscript{5}Agilent, 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. \textbf{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. \textbf{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. Atkins\textsuperscript{1}
   and Elaine Hasty\textsuperscript{2}, \textsuperscript{1}SPEX CertiPrep, Metuchen, N.J., USA; \textsuperscript{2}CEM Corporation,
   Matthews, NC, USA. Presented by \textbf{Jessica Giles}.
11:40 (I080) DEVELOPMENT OF A METHOD FOR DETERMINATION OF FLUORINE
   IN TEA LEAVES USING ETV-ICP-OES. \textbf{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). \textbf{Jonathan
   J. Grandy}, University of Waterloo, Waterloo, ON, Canada
9:20 (I081) MICRO-FLUIDICS AND NANO-FLUIDICS FOR SPECTROCHEMICAL
   ANALYSIS IN THE FIELD. \textbf{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 Su¹, Tony Munoz¹, Ewa Dabek-Zlotorzynska² and Valbona Celo². 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 Merrifield¹, 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.


11:40 **(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. Bergquist1, 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 Zhang1,2, Karl Jobst1, Paul Helm1, Eric Reiner1 and Ian Brindle2, 1Ontario 
Ministry of the Environment and Climate Change, Etobicoke, ON, Canada; 2Brock 
University, St. Catharines, ON, Canada; 3Hospital 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 Alaee. 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 Todoli1, 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
15:00 Refreshment break

15:40 **(I051)** ONLINE MICRODROPLET STANDARD ADDITION FOR QUANTIFICATION OF DIVERSE NANOPARTICLES BY SINGLE-PARTICLE ICP-TOFMS. **Alexander Gundlach-Graham¹**, 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 Patch¹**, Anbareen Farooq¹, Vincent Gagnon¹, Iris Koch¹, Denis O'Carroll² and Kela Weber¹, ¹Royal 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. Lamsal¹**, 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