

1995 International Conference on Flow Injection Analysis  
 Technical Program

**Sunday, Aug. 13**

5:00—8:00 pm                      *Registration at Meany Tower Hotel, Chancellors Room*

6:30—8:00                          *Reception, Grand Ballroom*

**Monday, Aug. 14**

8:00 am                              *Continental breakfast, compliments of ICFIA; Registration*

8:45                                  *Welcome: Gary Christian*

*Session Chair: Charles Patton*

8:55                      L-1                      "Liquid-Liquid Extraction Preconcentration in Solvent Extraction FIA Based on the Differential Flow Velocities," Charles A. Lucy and Susan Varkey, University of Calgary (Canada)

9:20                      L-2                      "The Application of Chromatomembrane-Cells to Extraction Procedures in Microanalysis," Jürgen Simon, Free University of Berlin (Germany) and Leonid N. Moskvín, State University of St. Petersburg (Russia)

9:45                      L-3                      "Membrane Assisted Flow Analysis," Vlastimil Kuban, Mendel University (Czech Republic)

10:10                                  *Exhibits and Break*

10:40                      L-4                      "Speciation Analysis Using Flow-Injection Methodology. A Review," Marek Trojanowicz, University of Warsaw (Poland)

11:05                      L-5                      "The Gig Harbor Environmental FIA Project," Don C. Olson, Global FIA (Washington) and Stan Stearns, Valco Instrument Co., Inc. (Texas)

11:30                      L-6                      "Determination of Morphine in Process Streams by Sequential Injection Analysis with Chemiluminescence Detection," Simon W. Lewis, Neil W. Barnett, and Daryl J. Tucker, Deakin University (Australia)

11:55                                  *On own for Lunch*

1:25                                  *Reconvene—Session Chair: Rob Synovec*

1:30                      L-7                      "Head-space Flow Injection for the On-line Determination of Iodide in Urine Samples with Chemiluminescence Detection," J. L. Burguera, M. R. Brunetto, Y. Contreras, M. Burguera, M. Galignani, P. Carrero and Y. Petit de Peña, University of Los Andes (Venezuela)

1:55                      L-8                      "Monitoring CP-93,393 Reaction Mixtures by Flow Injection Analysis/Mass Spectrometry," S. T. Colgan, T. R. Sharp, P. D. Hammen, R. H. Reed, G. J. Horan, and P. W. Gwiazda, Pfizer Central Research (Connecticut)

2:20                      L-9                      "Fluorimetric Determination of Trace Amounts of Aldehydes in Auto Exhaust Gas with 1,3-Cyclohexanedione by Flow Injection Analysis," Tadao Sakai, Hideki Nagasawa and Harumitsu Nishikawa, Aichi Institute of Technology (Japan)

2:45                                  *Exhibits and Poster Session #1 : Tadao Sakai, Session Chair*

- 3:45 L-10 "Determination of Trace Amounts of Hydride Forming Elements by Atomic Absorption Spectrometry with On-line Preconcentration by Coprecipitation, as Illustrated by Assay of Ultra-low Levels of Se and As," Elo H. Hansen, Steffen Nielsen and Jens J. Sloth, Technical University of Denmark
- 4:10 L-11 "Non-Linearity with Metal-Metal Indicator Complex Reactions in FIA," Jacobus F. van Staden and Daniel Malan, University of Pretoria (South Africa)
- 4:35 L-12 "Sequential Injection Technique Employed for Stoichiometric Studies. Optimization and Quantitative Determination of Some Fluoroquinolone Antibiotics Complexed with Iron(III) in Sulfuric Acid Media," Salah M. Sultan and Fakhr Eldin O. Suliman, King Fahd University of Petroleum and Minerals (Saudi Arabia)
- 5:00 L-13 "Sequential Injection Method for the Determination of Hexavalent Chromium in Water and Soil," Richard H. Taylor and Jay W. Grate, Pacific Northwest Laboratory (Washington)

5:25 *Close*

**Tuesday, Aug. 15**

7:45 am *Continental breakfast*

8:30 *Convene—Session Chair: Shoji Motomizu*

8:35 L-14 "A Forty-Year Retrospective on Skeggs' Approach to Continuous Flow Analysis: Was the 'Birth of the Bubble' Thirty Years Premature?" Charles J. Patton, U.S. Geological Survey (Colorado)

9:00 L-15 "FIA and the Skill of the Analytical Chemist in Line of Traceability," Kazuo Yasuda, Hitachi Ltd. (Japan)

9:25 L-16 "FlowTEK: FIA Software for the Laboratory and the Process," D.E. Barnes, G. D. Marshall, M. J. C. Taylor and V. Da Silva, MINTEK (South Africa)

9:50 *Exhibits and Poster session #2: Ricardo Erthal Santelli, Session Chair*

10:50 L-17 "Chromatographic Sensing on an Optical Fiber by Mode-Filtered Light Detection: A New Concept for Flow Injection Analysis," Carsten A. Bruckner and Robert E. Synovec, University of Washington

11:15 L-18 "Enhanced Surfactant Determination by Ion-Pair Formation Using Flow Injection Analysis and Dynamic Surface Tension Detection," Toby E. Young and Robert E. Synovec, University of Washington

11:40 L-19 "Electroinjection Analysis," Victor P. Andreev, Alexandr G. Kamenev, Nicolay S. Popov, Russian Academy of Sciences (Russia)

12:05 *On own for Lunch*

1:25 *Reconvene—Session Chair: Elo Hansen*

1:30 L-20 "Portable Flow Injection Monitors for Liquids and Gases," Peter W. Alexander, University of Tasmania (Australia)

1:55 L-21 "Design of Integrated Laboratory and Portable Flow Injection Analysis Systems," Bruce R. Davis, The Boeing Co. (Washington)

- 2:20 L-22 "History and Future of Flow Injection Analysis in Japan," Shoji Motomizu, Okayama University (Japan)
- 2:45 L-23 "On-Line HPLC/FT-IR and CE/FT-IR Interfaces: Do They Have a Role in FIA?" Yuxin Zhu and Peter R. Griffiths, University of Idaho
- 3:10 *Exhibits and Break*
- 4:00 L-24 "Radiometric Flow Injection Analysis (RFIA)," Myint U, University of Yangon (Myanmar) and J. Tolgyessy, Slovak Technical University (Slovak Republic)
- 4:25 L-25 "Separation and On-line Detection of Sr<sup>90</sup> in Nuclear Waste Samples by Sequential Injection Analysis," Jay W. Grate, Robert Strebin, and Jiri Janata, Pacific Northwest Laboratory (Washington) and Oleg Egorov and Jaromir Ruzicka, University of Washington
- 4:50 L-26 "A 'Home-made' FIA HG-AAS System," Amgrimur Thorlacius, Agricultural Research Institute (Iceland)
- 5:15 *Close*
- 5:45 *Reception*
- 6:30 *Conference banquet, included in registration fee*

**Wednesday, Aug. 16**

- 7:15 am *Continental breakfast*
- 8:00 *Convene—Session Chair: Jose Burguera*
- 8:05 L-27 "New Concepts of Sequential Injection Methodology and Its Application to Fluorescence Microscopy of Live Cells," J. Ruzicka, P. J. Baxter and G. D. Christian, University of Washington
- 8:30 L-28 "A Novel Coaxial Jet Mixer for Rapid Kinetic Assays in Flow Injection," L. D. Scampavia, G. Blankenstein, P. Hodder, J. Ruzicka and G. D. Christian, University of Washington
- 8:55 L-29 "Potentiometric and Voltammetric Detection Using the Fountain Cell," M. Wasberg, K. Stenlund and A. Ivaska, Åbo Akademi (Finland)
- 9:20 *Exhibits and Poster Session #3: Takeshi Yamane, Session Chair*
- 10:20 L-30 "Novel  $\mu$ -flow Cells for Measurements in Organic and Aqueous Solutions and Their Application to  $\mu$ -FIA-FTIR," B. Lendl and R. Kellner, Vienna University of Technology (Austria)
- 10:45 L-31 "FIA Systems with Immobilized Enzymes—Improvement of Applicability by Integration of Coupled Reactions, Separation Steps and Background Correction," H.-L. Schmidt, Technische Universität München (Germany)
- 11:10 L-32 "Determination of Ultratrace Selenium(IV) in Water by FI On-line Sorbent Extraction Preconcentration and Separation Coupled with Electrothermal Atomic Absorption Spectrometry," Bernhard Welz, Xiu-ping Yan and Michael Sperling, Bodenseewerk Perkin-Elmer GmbH (Germany)
- 11:35 *Planning for ICFIA 97*
- 12:00 *Close; afternoon free .*

6:30 pm

Meet at Pier 69 on Seattle's waterfront for a cruise on the *Victoria Clipper III* to Gig Harbor Environmental Research Laboratory; buffet dinner aboard the boat; tour of the laboratory; dessert on the way back. Return to Pier 69 about 10:00.

**Thursday, Aug. 17**

- 8:00 *Continental breakfast*
- 8:30 *Convene—Session Chair: Jarda Ruzicka*
- 8:35 L-33 "Sequential Injection Analysis (SIA) for At-line Process Analysis of Enzyme Activity," Lars Hallgren and Kaja Lausten Knudsen, Novo Nordisk A/S (Denmark)
- 9:00 L-34 "Flow Injection on Disposable Preconcentrating Surfaces: Sorbent Beads and Organic Wetting Films," David Holman, Yongyi Luo, Shigenori Nakano, Oleg Egorov, G. D. Christian and J. Ruzicka, University of Washington
- 9:25 L-35 "Potentiometric Flow Titration in Nonaqueous Solvent System," Toshihiko Imato, Kyushu University (Japan)
- 9:50 L-36 "Thermal Micro-Biosensors for *in vivo* and *ex vivo* Determination of Blood Metabolites," Bin Xie, and Bengt Danielsson, University of Lund (Sweden) and Aziz Amine, Universite Libre de Bruxelles (Belgium)
- 10:15 L-37 "Investigations on Flow-through Dialysis," Wolfgang Frenzel, Technische Universität Berlin (Germany)
- 10:40 *Exhibits and Break*
- 10:55 L-38 "Flow Injection Analysis of X-Ray Contrast Media: Determination of Primary Aromatic Amines in Viscous, Concentrated Samples," Gro Johansen, Nycomed A/S (Norway)
- 11:20 L-39 "Performance of an FIA System Using a Pyranose Oxidase Membrane Electrode," L Satoh, J. Kurihara and T. Satoh, Kanagawa Institute of Technology (Japan)
- 11:45 L-40 "On-line Coupling of Electrothermal Atomic Absorption Spectrometry with Flow Injection Sorption Preconcentration in a Knotted Reactor for the Determination of Lead in Water," Bernhard Welz, Xiu-ping Yan and Michael Sperling, Bodenseewerk Perkin-Elmer GmbH (Germany)
- 12:10 *Panel discussion—session chairs*
- 12:40 *Close*

**Friday, Aug. 18**

*There will be a moderate hike in the Cascade Mountains for anyone interested. Stay an extra day and enjoy the high roads of the Pacific Northwest.*

## Index to Posters

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### Poster Session #1 (Monday, August 14, 2:45—3:45 pm)

*Session Chair: Tadao Sakai*

- P-1 "Determination of Actinides in Environmental Samples by Flow Injection Inductively Coupled Plasma Mass Spectrometry," Joseph H. Aldstadt III, Jacqueline M. Kuo, Lesa L. Smith and Mitchell D. Erickson, Argonne National Laboratory (Illinois)
- P-2 "Flow Injection Fluorimetric Determination of Mercury(II) with Calcein," A. Lista, M. Palomeque, B. Fernandez Band, Universidad Nacional del Sur (Argentina)
- P-3 "Nanomolar Determination of Glucose Utilising an Amperometric Biosensor Based on Covalently Bound Glucose Oxidase to a Reticulated Vitreous Carbon (RVC) Used As Working Electrode," Masoud Khayyami, Bin Xie, Dario Kriz, Gillis Johansson, Per Olof Larsson, Bengt Danielsson, University of Lund (Sweden)
- P-4 "Kinetics of Biomolecules Determined by Flow Injection Renewable Surface Assay," Bodil Willumsen, Steen Østergaard, Elo H. Hansen, Gary Christian and Jaromir Ruzicka, University of Washington, Technical University of Denmark
- P-5 "Flow Injection Spectrophotometric Determination of NO, NO<sub>2</sub> and SO<sub>2</sub> in the Atmosphere Using Passive Sampling Devices," Keiro Higuchi, Ryuji Yamazaki and Akiko Inoue, Tokyo Kasei Kogyo Co. Ltd. (Japan)
- P-6 "MicroFlo™ Pipettor/Dispenser Pumps," Harold Kantner, Independent Inventor (Illinois)
- P-7 "Flow Injection System for Determination of Trace Manganese in Salts: Elimination of Blank Peak Effect and Use of Catalytic Oxidation of Protocatechuic Acid by Hydrogen Peroxide," Takeshi Yamane and Kazuo Koshino, Yamanashi University (Japan)
- P-8 "Membrane-Based Gas Sensors for the Determination of Inorganic Volatile Species," Dietrich Schepers and Gerhard Schulze, Institut für Anorganische und Analytische Chemie (Germany) and Wolfgang Frenzel, Technische Universität Berlin (Germany)
- P-9 "Micro Flow Injection System for Spectrophotometric Determination," Shoji Motomizu and Hiroaki Nakamura, Okayama University (Japan)
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### Poster Session #2 (Tuesday, August 15, 9:50—10:50 am)

*Session Chair: Ricardo Erthal Santelli*

- P-10 "Potentiometric Flow Injection Method for Chloride with Unrivalled Features." (Demonstration), Wolfgang Frenzel, Technische Universität Berlin (Germany)
- P-11 "An Amperometric Biosensor Based on a Reticulated Vitreous Carbon Working Electrode with Covalently Bound Co-enzyme (NAD<sup>+</sup>) and Lactate Dehydrogenase," Masoud Khayyami, Gillis Johansson, Bengt Danielsson, University of Lund (Sweden) and Nuria Pena Garcia, TMS Chem AB (Sweden)
- P-12 "Sample Treatment by FIA," Vlastimil Kuban, Mendel University (Czech Republic)
- P-13 "Spectrophotometric Flow Injection Analysis Based Displacement Reactions in Water-Ammonia Medium," Vladimir V. Kuznetsov, Du Dinh Dong and Vladislav V. Trubachev, Mendeleyev University (Russia)

- P-14 "The Determination of Lead, Nickel and Vanadium in Saudi Arabian Crude Oil by Sequential Injection Analysis/Inductively Coupled Plasma/Mass Spectrometry (SIA/ICP/MS)," Hassan M. Al-Swaidan, King Saud University (Saudi Arabia) and G. D. Christian, University of Washington
- P-15 "A Versatile Liquid Sample Introduction System for ICP-MS," Rob Henry and Paul Sigsworth, Fisons Instruments (Colorado)
- P-16 "Flow Injection Spectrophotometric Determination of Ascorbic Acid in Pharmaceutical Products with the Prussian Blue Reaction," J. A. Nóbrega and G. S. Lopes, Federal University of São Carlos (Brazil)
- P-17 "Sensitive Determination of Phosphorus, Based on Ion Association by Flow Injection Analysis," Mitsuko Oshima, Joko P. Susanto, Nobutake Goto and Shoji Motomizu, Okayama University (Japan)
- P-18 "Flow Injection Spectrophotometric Determination of Sulfate Ion Using a Novel On-line Reactor," Keiro Higuchi, Ryuji Yamazaki and Akiko Inoue, Tokyo Kasei Kogyo Co. Ltd. (Japan)

**Poster Session #3 (Wednesday, August 16, 9:50—10:50 am)**

*Session Chair: Takeshi Yamane*

- P-19 "Flow Injection System with On-line Sorption Preconcentration for Simultaneous ICP-AES Determination of Trace Metals in Solutions," N. P. Starshinova, G. I. Tsysin, E. M. Sedykh and N. M. Kuzmin, Russian Academy of Sciences (Russia)
- P-20 "Simultaneous Flow Injection Determination of D- and L- Lactate by Enzyme Modified Carbon Paste Electrodes," D. Narasiah and L. Gorton, University of Lund (Sweden) and U. Spohn, University of Halle (Germany)
- P-21 "Enzyme Electrode for Amplification of NAD<sup>+</sup>/NADH Using Glycerol Dehydrogenase and Diaphorase with Amperometric Detection in Flow Injection System," Xiaojing Tang and G. Johansson, University of Lund (Sweden)
- P-22 "Sensitivity and Selectivity Enhancements in FIA Through the Use of Ternary Fluorescent Complexes," Liwen Ye and Charles A. Lucy, University of Calgary (Canada)
- P-23 "Miniaturization of Flow Analysers," Vlastimil Kuban, Mendel University (Czech Republic)
- P-24 "Flow Injection Analysis for Hypoxanthine in Meat with DO Detector and Enzyme Reactor," Manami Numata, Naomi Funazaki, Satoshi Ito, Yasukazu Asano, DKK Corporation (Japan) and Yukio Yano, Itohamu Food Inc. (Japan)
- P-25 "Versatile LED-Based Photometer for Liquid Phase Measurements and Optosensing in Flow Injection Analysis," (Demonstration), Wolfgang Frenzel, Technische Universität Berlin (Germany)
- P-26 "Sequential Injection Extraction Applied to Forensic Toxicology for Drugs of Abuse from Urine," Kristina L. Peterson, Barry Logan, Jaromir Ruzicka and Gary D. Christian, University of Washington, Washington State Toxicology Laboratory
- P-27 "C-18 in Continuous Flow System for Lead Preconcentration and Determination in Biological and Vegetable Samples by Flame Atomic Absorption Spectrometry," Ricardo Erthal Santelli, Rosimar Lima and Kátia Christina Leandro, Federal Fluminense University (Brazil)