

CECE 2023

**18th International Interdisciplinary
Meeting on Bioanalysis**

**“... bringing people
and ideas together ...”**

**October 23 – 25, 2023
Hotel Continental
Brno, Czech Republic
www.ce-ce.org**

Organized by:

Institute of Analytical Chemistry of the CAS, v. v. i., Veveri 97, 602 00 Brno

Organizing committee: Frantisek Foret, Jana Lavicka, Jan Prikryl, Petr Kuban

Webmaster: JRWN s. r. o., Jan Prikryl

Find the meeting history and more at www.ce-ce.org.

Foreword

Welcome to CECE 2023, the 18th International Interdisciplinary Meeting on Bioanalysis. As in previous years, our goal is to “bring together scientists from different disciplines who may not meet at other meetings”. Lectures by well-established scientists and presentations by students and postdocs will be complemented by poster sessions open during all three days. The organizers thank all speakers, sponsors, and participants for their support. Please check our web at www.ce-ce.org for more information about the history, programs, photos, and videos.

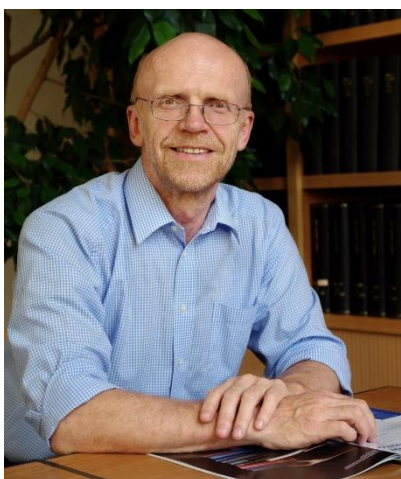


Brno, October 20, 2023

The Medal of Jaroslav Janák

The Medal of Jaroslav Janák for contributions to the development of analytical sciences was established by the Institute of Analytical Chemistry. Named after the inventor of the gas chromatograph (patented in 1952), the founder of the institute (1956), and its long-term director, the medal is awarded to scientists who have significantly contributed to the development of separation sciences.

In 2023, the Medal of Jaroslav Janák goes to **Prof. Bohuslav Gaš**. Bob studied at the Charles University in Prague. After finishing his doctorate in 1979, he worked at the Research Institute of Organic Syntheses and the Institute of Physical Chemistry and Electrochemistry of the Czechoslovak Academy of Sciences. In 1994, Bob returned to his Alma Mater to pursue the theory and instrumentation of electromigration separation methods. Since 2005, he has



been a professor at the Department of Physical and Macromolecular Chemistry. He has served two terms as a dean of the Faculty of Natural Sciences. Besides serving as the deputy editor of *Electrophoresis* (Wiley VCH), he is also a passionate lecturer of physical chemistry highly prized by his students. In 2023, he received the Velemluk prize for the best lecture from his students. Other awards include medals for the development of Charles University and the Arnold O. Beckman medal for exceptional lifelong contributions to the theoretical understanding and development of new electro-driven separation techniques (2016). He has authored seven international patents and over 140 papers published in impacted journals, which collected over 4000 citations.

I wish to congratulate Bob on all his achievements and thank him for all his work for the analytical chemistry community and science in the Czech Republic.



Franta Foret

Program of the CECE 2023

Hotel Continental, Brno, Czech Republic, October 23 – 25, 2023

October 23, 2023 (Monday)

12:00 Opening the Registration Desk

13:00-13:15 **Opening Remarks and Award of the Medal of Jaroslav Janak**
Chair: Frantisek Foret

Session 1
Chair: Frantisek Foret

13:15-13:45 **O1** Fate of One Equation
Bohuslav Gas, *Charles University, Prague, Czech Republic*

13:45-14:15 **O2** Intact Protein Analysis in Biological Matrices by Capillary Zone
Electrophoresis – Mass Spectrometry
Katarina Marakova, *Comenius University Bratislava, Bratislava, Slovakia*

14:15-14:45 **O3** Recent Advances in Electroextraction Techniques: A Perspective from a
Brazilian Research Group
Ricardo Mathias Orlando, *Federal University of Minas Gerais, Belo Horizonte, Brazil*

14:45-15:05 **J1** Detection of Protein Biomarkers Using Lateral Flow Immunoassays Based on
Photon-Upconversion Nanoparticles
Eliska Machacova, *Masaryk University, Brno, Czech Republic*

15:05-15:35 **Coffee Break**

Session 2
Chair: Petr Kuban

15:35-16:05 **O4** Integration of Metabolic Sensors in Musculoskeletal Organs-on-a-Chip in
Osteoarthritis Research
Mario Rothbauer, *Medical University of Vienna, Vienna, Austria*

16:05-16:35 **O5** Capillary Electrophoresis with Mass Spectrometry: From Enantiomers to
Nanoparticles
Jan Petr, *Palacky University, Olomouc, Czech Republic*

16:35-16:55 **J2** Solid Phase Extraction Methods for Purification of Positively Charged Oligosaccharides and Glycans
Denisa Smolkova, *Institute of Analytical Chemistry of the Czech Academy of Sciences, Brno, Czech Republic*

October 24, 2023 (Tuesday)

Session 3

Chair: Andras Guttman

08:30-09:00 **O6** Design and Development of Coating Materials with Ionic Liquids/Surfactants on Iron Oxide-based Magnetic Nanoparticles and 3D-printed Silica/Thermoplastic Polymer Composites as Extraction Sorbent Materials in Drug Analysis
Tomasz Baczek, *Medical University of Gdansk, Gdansk, Poland*

9:00-9:30 **O7** Noncovalent Biomolecular Interactions Studied by Affinity Capillary Electrophoresis
Vaclav Kasicka, *Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences, Prague, Czech Republic*

09:30-9:50 **J3** Tracking of the pH Gradient During cIEF-LIF Analysis Using Fluorescent Isoelectric Point Markers and Their Application in Efficient Separation of Protein Samples
Pavlina Dadajova, *Institute of Analytical Chemistry of the Czech Academy of Sciences, Brno, Czech Republic*

9:50-10:10 **J4** Body-on-a-Chip Technologies Towards Neurotoxic Monitoring and Environmental Safety/CBRN Applications
Mateo G. Vasconez Martinez, *Vienna University of Technology, Vienna, Austria*

10:10-10:40 **Coffee Break**

Session 4

Chair: Tomasz Baczek

10:40-11:10 **O8** Non-Destructive Forensic Document Examination of Ballpoint Cationic Inks by Blotting-Capillary Electrophoresis
Doo Soo Chung, *Seoul National University, Seoul, Korea*

11:10-11:40 **O9** The Role of IgA N-Glycosylation in the Development of Oral Mucositis
Eniko Gebri, *University of Debrecen, Debrecen, Hungary*

11:40-12:00 **J5** Magnetic Microparticles as Potential Stationary Phase for Affinity Studies in Capillary Electrochromatography
Michal Sedlak, *Masaryk University, Brno, Czech Republic*

12:00-12:20 **J6** Exploring the Feasibility of Animal-Free Protein Analysis in Molecular Osteoarthritis Research
Eva Ingeborg Reihls, *Medical University of Vienna, Vienna, Austria*

12:20-14:20 **Lunch Break – Hotel Restaurant**
Poster Session

Session 5
Chair: Frantisek Foret

14:20-14:50 **O10** Analysis of Glycans for Disease Diagnostics
Jan Tkac, *Institute of Chemistry, Slovak Academy of Sciences, Bratislava, Slovakia*

14:50-15:20 **O11** Two Columns, More Than Double Band Broadening - Dilution Issues in Comprehensive Two-Dimensional Liquid Chromatography
Petr Cesla, *Univeristy of Pardubice, Pardubice, Czech Republic*

15:20-15:40 **J7** A New Device for Online Nanoscale Sampling and Capillary Electrophoresis Analysis of Plant Sap Composition
Natalie Melicherova, *Institute of Analytical Chemistry of the Czech Academy of Sciences, Brno, Czech Republic*

15:40-16:00 **J8** Exploration of a Glycan Biomarker Panel for the Early Screening of Type 2 Diabetes
Rebeka Torok, *University of Pannonia, Veszprem, Hungary*

16:00-16:30 **O12** There and Back Again: One Person's Struggle Between Industry and Academia and How It Relates to Ionization Efficiency
Michael Volny, *Czech Academy of Sciences, Prague, Czech Republic*

19:00 **Conference Dinner – Hotel Restaurant**

October 25, 2023 (Wednesday)

Session 6

Chair: Doo Soo Chung

- 9:00-9:30 **O13** Electromigration Dispersion in SDS-CGE of Proteins
Andras Guttman, *University of Debrecen, Debrecen, Hungary*
- 09:30-10:00 **O14** Automated Analyses of Dried Blood Spots by Capillary Electrophoresis
Milos Dvorak, *Institute of Analytical Chemistry of the Czech Academy of Sciences, Brno, Czech Republic*
- 10:00-10:20 **J9** Separation Tools and Infectious Diseases: Feasibility Study of a High Throughput Extracorporeal Virus Capture Device
Dora Szerenyi, *University of Pannonia, Veszprem, Hungary*

10:20-10:50 **Coffee Break**

Session 7

Chair: Frantisek Foret

- 10:50-11:20 **O15** The Art of Liquid Biopsy: Clinical Considerations and Analytical Approaches in Noninvasive Molecular Cancer Diagnostics
Marek Minarik, *Watrex Praha, s.r.o. and Charles University, Prague, Czech Republic*
- 11:20-11:50 **O16** Separation and Analysis of Proteins Using SDS Capillary Gel Electrophoresis Online Coupled to Electrospray Ionization Mass Spectrometry
Gabor Jarvas, *University of Pannonia, Veszprem, Hungary*
- 11:50-12:10 **J10** Epitachophoresis - Stabilization of the LE/TE Border
Vanda Kocianova, *Institute of Analytical Chemistry of the Czech Academy of Sciences, Brno, Czech Republic*
- 12:10-12:30 **J11** GC×GC for the Determination of Hypercholesterolemic Fatty Acids in Cow Colostrum During the First Days of Lactation
Veronika Farkova, *Masaryk University, Brno, Czech Republic*

12:30-12:40 **Closing Remarks**

12:40 **Lunch – Hotel Restaurant**
Poster Removal

List of poster presentations

- P1 Separation of Sodium Dodecyl Sulfate-Proteins by Capillary Electrophoresis Using Dilute and Ultra-Dilute Dextran Solutions
Felicia Auer, Andras Guttman
- P2 Impact of Heavy Water on Luminescence of Quantum Dots
Jan Badin, Josef Kučera, Ivona Voráčková, Petr Táborský
- P3 Optimization of Glycoproteomic Protocol for Efficient and Sensitive Analysis of N-Linked Glycans by CE/LIF
Janette Bobalova, Denisa Smolkova, Dana Strouhalova, Richard Cmelik, Jana Lavicka
- P4 Improvement of Concentration Sensitivity in Capillary Electrophoresis-Frontal Analysis
Taťána Bržezická, Lenka Kohútová, Hana Mlčochová, Zdeněk Glatz
- P5 BODIPY-based Fluorescent Tag for Efficient Oligosaccharide Labeling
Richard Cmelik, Denisa Smolkova, Michal Gregus, Hubert Vesely, Hana Pizova, Pavel Bobal, Jana Lavicka
- P6 UHPLC-MS Analysis of Salivary Bile Acids in Non-Invasive Diagnostics of Barrett's Esophagus
Věra Dosedělová, Markéta Laštovičková, Jiří Dolina, Štefan Konečný, Petr Kubáň
- P7 Determination of Lamotrigine in Alternative Types of Samples Utilizing Validated LC-MS Method
Viktória Ďurčová, Marta Pelcová, Jan Juřica, Zdeněk Glatz
- P8 Effect of COVID-19 Disease and Vaccination on Salivary Secretory IgA N-Glycome
Anna Farkas, Petra Polyák, Enikő Gebri, Kinga Bágyi, András Guttman
- P9 Use of Calcium Chloride for Removal of Polysaccharides During DNA Isolation from Tropical Fruit Products
Lenka Fialova, Katerina Zylkova, Ivana Marova
- P10 Importance of Glycosylation Modification of Sialoglycoproteins in Dementia
Eniko Gebri, Timea Kulcsar, Andras Guttman
- P11 N-Glycomic Identification of Novel Soft Tissue Prognostic Biomarkers for Oral Cancers
Eniko Gebri, Kinga Hogyor, Adrienne Szabo, Gabor Jarvas, Zuzana Demianova, Andras Guttman
- P12 UHPLC-HDMS^E Analysis of Lipids in Glial Cells
Ivana Gerhardtova, Timotej Jankech, Petra Majerova, Dominika Olesova, Josef Jampilek, Andrej Kovac

- P13 Analysis of Peptides and Proteins by Native and SDS Capillary Gel Electrophoresis Coupled to Electrospray Ionization Mass Spectrometry
Daniel Sarkozy, Andras Guttman
- P14 Single Drop Microextraction for Enhanced Detection in Glycan Analysis by Capillary Electrophoresis
Eniko Gebri, Sunkyung Jeong, Anna Farkas, Doo Soo Chung, Andras Guttman
- P15 Preparative Gel Electrophoresis for the Fractionation of DNA
Helena Hrušková, Roman Řemínek, František Foret
- P16 UHPLC-MS/MS Strategy for Tryptophan Metabolite Analysis Based on Simple Sample Derivatization Using 2-Bromo-4'-Nitroacetophenone
Timotej Jankech, Ivana Gerhardtova, Petra Majerova, Juraj Piestansky, Josef Jampilek, Andrej Kovac
- P17 Inhaled Lead Nanoparticles Cause Degenerative Alterations in Brain Tissue: Interdisciplinary Methodological Approach
Adriena Jedličková, Daniela Kristeková, Jana Dumková, Tomáš Vaculovič, Pavel Mikuška, Marcela Buchtová
- P18 Synthesis of Silver-Iron Oxides Nanocomposites and Their Application for SERS
Vladimir Jonas, Jiri Volanek, Duy Hai Bui, Jan Prikryl, Thi Thanh Ngan Nguyen, Thu Vu, Anna Tycova
- P19 Development of the Miniaturized Instrumentation for Caspase Activity Detection
Michael Killinger, Barbora Veselá, Eva Matalova, Karel Kleparnik
- P20 Enhancing Sensitivity with Different Injection Modes for Amino Acid Structure Compounds by MEKC
Piotr Kowalski, Michał Pieckowski, Ilona Olędzka, Anna Roszkowska, Alina Plenis, Tomasz Bączek
- P21 HPLC-FLD Method Development for the Determination of Alpelisib in Human Plasma
Eva Krejčířová, Marta Pelcová, Jan Juřica, Zdeněk Glatz
- P22 Differentiation of Biofilm-Positive and Biofilm-Negative Candida Parapsilosis Strains by Capillary Isoelectric Focusing
Anna Kubesová, Jiří Šalplachta, Filip Růžička, Veronika Holá
- P23 Characterization of the Miniaturized Platform for Cell Migration Studies
Petra Lišková, Adriena Jedličková, Michael Killinger, Marcela Buchtová, Tomáš Václavek
- P24 The Ionic Liquids as Supporting Agents for Extraction and Electrophoretic Separation of Clinically Important Catecholamines
Ilona Olędzka, Natalia Kaczmarczyk, Piotr Kowalski, Anna Roszkowska, Alina Plenis, Tomasz Bączek

- P25 Sample Pretreatment Methods for CZE-MS Analysis of Selected Intact Growth Factors in Various Biological Fluids
Martina Opetová, Radovan Tomašovský, Peter Mikuš, Katarína Maráková
- P26 HPLC Analysis of Vancomycin and Magnetic Nanoparticles Modified with Chitosan and Vancomycin
Jakub Podhajský, Miloš Barna, Kristýna Burešová, Jan Raja, Pavel Melichercik, Eva Klapková, Jana Čepová, Julia Werle, Luděk Melich, Karel Kotaška, Richard Průša, Rene Kizek
- P27 Miniaturized System for Capillary Electrophoresis Coupling with Mass Spectrometry Detection
Roman Řemínek, Tomáš Václavek, Elizaveta Vereshchagina, Andreas Vogl, František Foret
- P28 Analysis of Low Numbers of Bacterial Cells by CE and MALDI-TOF MS Utilizing Roughened Capillary
Jiří Šalplachta, Anna Kubesová, Pavel Karásek, Filip Růžička, Michal Roth
- P29 Capillary Electrophoresis-Mass Spectrometry Analysis of Insulin-like Growth Factor 1 in Pharmaceutical Preparations
Radovan Tomašovský, Martina Opetová, Peter Mikuš, Katarína Maráková
- P30 Novel Fluorophores Applicable for Glycan Detection
Hubert Vesely, Hana Pizova, Pavel Bobal
- P31 Synthesis and Modification of Magnetic Nanoparticles for Bioanalytical Applications
Jiri Volanek, Anna Tycova, Vera Dosedelova, Petr Kuban
- P32 Epitachophoresis – New Insert for Horizontal Gel Electrophoresis Device
Markéta Vaňková, Ivona Voráčová, Antonín Hlaváček, František Foret
- P33 New Design of APCI/APPI Ion Source for Low Flow Rates
Vladimír Vrkoslav, Kateřina Pražáková, Barbora Kloudová, Ondřej Pačes, Josef Cvačka

Acknowledgement



**MEYS V4-Korea Joint Research Project 9F23002
„ATBG“**

MSB 2024



May 19 – 22, 2024
Hotel Continental
Brno, Czech Republic

www.msb2024.org



Microscale Separations and Bioanalysis

Conference Topics

| | | |
|------------------------------|-----------------------|-------------------------|
| Capillary electrophoresis | Bioinformatics and AI | Pharmaceutical analysis |
| Liquid chromatography | Instrumentation | Biomedical analysis |
| Multidimensional separations | Sample preparation | Food analysis |
| Mass spectrometry | Miniaturization | Forensic analysis |
| Hyphenated techniques | Microfluidics | Environmental analysis |

Abstract Submission Deadlines

Oral presentations: February 16, 2024

Poster presentations: April 30, 2024

| Registration fees | General | Student |
|-----------------------------------|---------|---------|
| Early bird (until March 31, 2024) | EUR 450 | EUR 300 |
| Regular (until May 10, 2024) | EUR 550 | EUR 350 |
| On-site | EUR 650 | EUR 400 |

Organizing Committee

Frantisek Foret (chair)

Jana Lavicka, Jan Prikryl, Petr Kuban

Institute of Analytical Chemistry of the CAS, Brno, Czech Republic

