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V4 Symposium

FLOW ANALYSIS & CAPILLARY ELECTROPHORESIS

Programme

Krakow, June 28 – July 1, 2021

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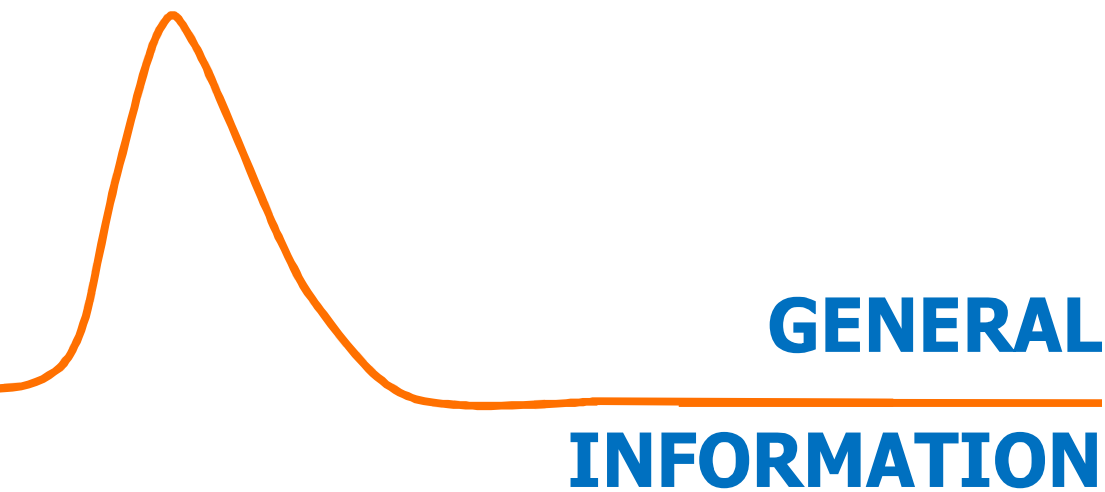
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CO-ORGANIZERS



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CONFERENCE PRESENTATIONS

The official language of Symposium is English. Scientific programme includes:

Type of presentation	Symbol	Time (presentation + discussion)
Opening Lecture	OL	45 min
Lecture In Memoriam	ML	15 min
Keynote Lecture	KL	30 min (25 min + 5 min)
Invited Lecture	IL	20 min (17 min + 3 min)
Sponsor Lecture	SL	20 min (17 min + 3 min)
V4 Invited Lecture	V4L	15 min
Oral Presentation	OP	15 min (12 min + 3 min)
Youth Session Presentation	YS	15 min (12 min + 3 min)
Poster Presentation (Poster Session)	P	1-2 min

V4 WORKSHOPS "FLOW ANALYSIS & CAPILLARY ELECTROPHORESIS"

28th June 2021, Monday, 10.00 – 11.30

Open source hardware for flow control

The workshop provides basic knowledge of how to set up transistor array-based system for solenoid pumps actuation. You will learn how to set up simple electronic circuit based on breadboard and microcontroller and program it in C, the simplest widely-used programming language for open-source microcontrollers.

By the end of the workshop, a participant should be able to write simple program in C to control its own prepared electronic circuit for actuation of module for single standard calibration.

28th June 2021, Monday, 12.30 – 14.00

In-laboratory built capillary electrophoresis instrument

The workshop will provide basic knowledge on capillary electrophoresis and on building a lab-made CE instrument with commercially available parts. You will learn some basic theoretical knowledge on the migration phenomena, choice of separation electrolytes, injection and analysis as well as construction of a CE instrument including all parts – high voltage power supply, detection, data acquisition.

In the practical part, a construction of a CE instrument from available parts will be demonstrated.

28th June 2021, Monday, 14.30 – 16.00

Red-Green-Blue (RGB) algorithm for assessing analytical methods

The workshop will provide basic theoretical and practical information on using the RGB model for comprehensive evaluation and comparison of analytical methods, considering three main attributes: analytical performance (Red), safety/eco-friendliness (Green) and productivity/practical effectiveness (Blue).

VENUE

The Symposium will take place on-line. However, we encourage you to get to know and visit our beautiful city in the near future.



Fot. Piotr Krochmal

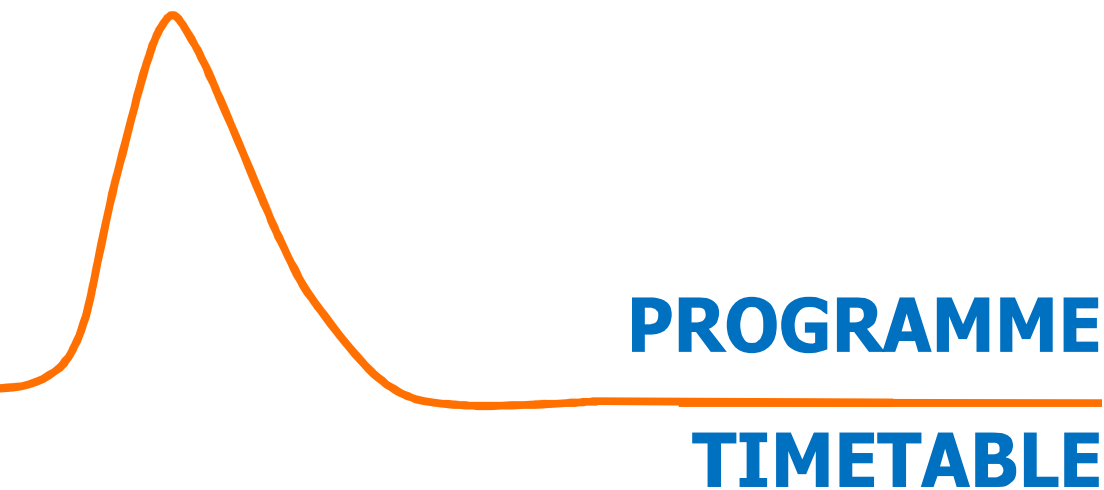
Krakow – due to its demographic, economic, social and scientific-cultural strength – ranks second in Poland among cities. It has unique values that are the

basis of its economic development and an increase in the quality of life. It has high-quality human capital at its disposal. It is a city people consciously choose as a place to live, work, study, spend free time in a variety of ways. Sustainable development and the ability to meet specific challenges with the skillful use of own resources are the main priorities.

The academic center, with its 650 year old University, is permanently connected with the city and builds an unrepeated resource of knowledge in a unique way. It is the key to competitiveness and innovation not only of Krakow, but also of the entire region. The intensively developing economy based on knowledge is a completely new process in the economic life of the City, which makes it part of the modern economies of the world.

The overriding goal for Krakow is not only to be a modern city but also to be proud of its historical heritage. It aspires to be an open, rich, friendly and safe metropolis, vibrant with culture. Smart management and strengthening the sphere of modern services and the research and development sector are the foundations for the development of Krakow - a city where innovation and effective cooperation between science and business are the focus.

We invite you to visit our website and learn about the possibilities offered by magical Krakow - rooted in tradition, sensitive to everyday life and open to development: <https://business.krakow.pl/>.



PROGRAMME

TIMETABLE

Monday, 28th June 2021

10.00 – 16.00

Workshops

16.30 – 17.45

Symposium Opening

Chair: Paweł Kościelniak, Peter Solich

Tuesday, 29th June 2021

9.00 – 11.20

Session 1

Chair: Petr Solich, Bogusław Buszewski

11.20 – 11.50

Coffee break

11.50 – 13.00

Session 2

Chair: František Švec, Marcela Segundo

13.00 – 14.00

Lunch

14.00 – 16.05

Session 3

Chair: Mihkel Kaljurand, Bohuslav Gaš

16.05 – 16.30

Coffee break

16.30 – 18.30

Youth Session 1

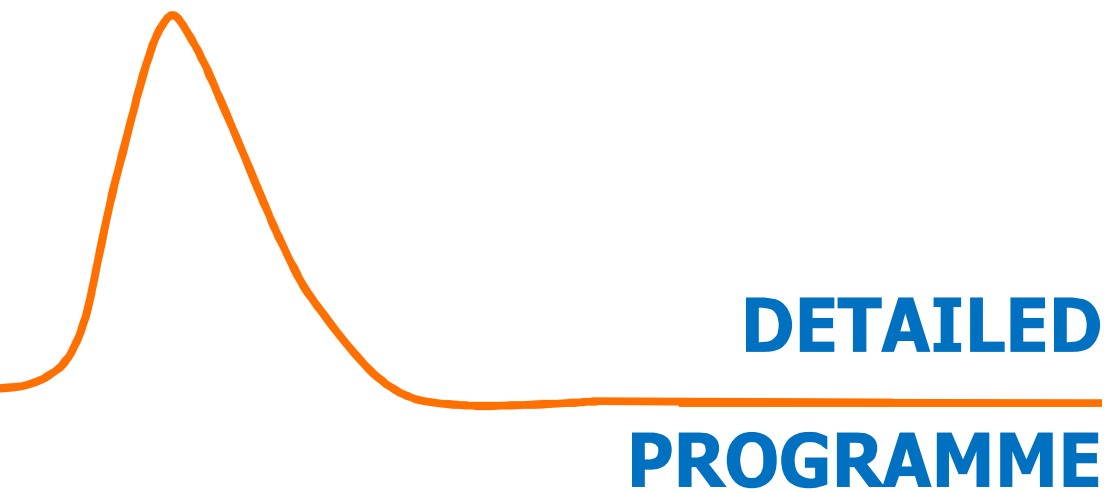
Chair: Attila Gáspár, Petr Chocholous

Wednesday, 30th June 2021

9.00 – 11.00	Session 4 Chair: Marek Trojanowicz, Wolfgang Frenzel
11.00 – 11.30	Coffee break
11.30 – 13.00	Session 5 Chair: Duangjai Nacapricha, Antonio O.S.S. Rangel
13.00 – 14.00	Lunch
14.00 – 15.40	Session 6 Chair: Marian Masar, Paweł M. Nowak
15.40 – 16.20	Coffee break
16.20 – 18.30	Poster Session Chair: Łukasz Tymecki, Ewa Poboży, Burkhard Horstkotte

Thursday, 1st July 2021

9.00 – 10.30	V4 Session Chair: Petr Solich, Joanna Kozak
10.00 – 10.30	Panel discussion V4 Chair: Michał Woźniakiewicz, Łukasz Tymecki
10.30 – 11.00	Coffee Break
11.00 – 12.15	Youth session 2 Chair: Cari Sanger van de Griend, Petr Kuban
12.15 – 13.30	Lunch
13.30 – 15.15	Session 7 Chair: Victor Cerda, Hana Sklenářová
15.15 – 15.45	Coffee break
13.30 – 15.15	Session 8 Chair: Elias A.G. Zagatto, Edyta Nalewajko-Sieliwoniuk
17.00 – 17.30	Closing remarks Paweł Kościelniak



Monday, 28th June 2021

10.00 – 16.00

Workshops

16.30 – 17.45

Symposium Opening

Chair: Paweł Kościelniak, Peter Solich

16.30

Opening ceremony

Paweł Kościelniak, Peter Solich

16.45

OL

Field flow fractionation and related techniques
in the separation and characterization of colloids
and biocolloids

Bogusław Buszewski, Viorica Raileanu, Paweł Pomastowski

17.30

ML

In memory of Prof. Milan Hutta (1955-2021)

Marián Masár

Tuesday, 29th June 2021

9.00 – 11.20

Session 1

Chair: Petr Solich, Bogusław Buszewski

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- | | | |
|-------|-------------|--|
| 9.00 | KL-1 | Porous polymer monoliths: Versatile materials for a variety of applications
<i>František Švec</i> |
| 9.30 | KL-2 | Immunoaffinity methods using lab-on-valve platforms: benefits and pitfalls
<i>Marcela Segundo</i> |
| 10.00 | SL-1 | SCIEEX, BioPharma EMEAI
The use of capillary electrophoresis in gene therapy product testing
<i>Stephen Lock, Jean-Charles Berliet, Karsten Hendriks, Marcia Santos, Tingting Li</i> |
| 10.20 | KL-3 | Capillary electrophoresis as a monitoring tool for flow composition determination
<i>Mihkel Kaljurand</i> |
| 10.50 | KL-4 | Capillary electrophoresis for adenovirus vaccine analysis
<i>Lars Geurink, Cari Sanger – van de Griend</i> |
-

11.20 – 11.50

Coffee break

11.50 – 13.00

Session 2

Chair: František Švec, Marcela Segundo

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- | | | |
|-------|-------------|---|
| 11.50 | IL-1 | Novel electrode materials for electroanalytical chemistry in flow systems
<i>Jiri Berek, Vlastimil Vyskocil, Pavel Dvorak</i> |
| 12.10 | IL-2 | Microfluidic enzyme reactors for fast protein digestion
<i>Attila Gaspar, Cynthia Nagy, Ruben Szabo, Adam Kecskemeti</i> |

12.30	OP-1	Are μ PADs overtaking classical methodologies as diagnosis tools? <i>Raquel B. R. Mesquita, António O. S. S. Rangel</i>
12.45	OP-2	Enhanced capabilities of Sequential Injection Chromatography <i>Petr Chocholous, Dalibor Šatínský, Petr Solich</i>
<hr/>		
13.00 – 14.00	Lunch	
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Session 3		
14.00 – 16.05	Chair: Mihkel Kaljurand, Bohuslav Gaš	
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14.00	IL-3	Open source capillary electrophoresis <i>Petr Kubáň, Petra Iitterheimová, Věra Dosedělová, Pavol Ďurč, Jan Příklad, Guillaume Erny, František Foret</i>
14.20	IL-4	Microchip electrophoresis for the analysis of complex ionogenic samples <i>Marián Masár, Peter Troška, Jasna Hradski, Adriána Miškovčíková, Marta Ďuriš, Roman Szucs</i>
14.40	IL-5	Advances in drug testing using capillary electrophoresis and native fluorescence <i>Vyacheslav Bolkvadze, Piret Saar-Reismaa, Mihkel Kaljurand, Merike Vaher, Jelena Gorbatsova, Jekaterina Mazina-Šinkar</i>
15.00	SL-2	Spektrometria & 908 Devices ZipChip: Achieving the full potential of CE-MS through the use of microfluidic technology <i>Scott Mellors</i>
15.20	OP-3	Capillary zone electrophoresis of extracellular vesicles: what do we know and what we would like to learn? <i>Szymon Dziomba, Aleksandra Steć, Joanna Jońca, Joanna Kasprzyk, Bogdan Lewczuk, Wojciech Piekoszewski, Agata Płoska, Leszek Kalinowski, Bartosz Wielgomas, Małgorzata Waleron, Krzysztof Waleron</i>

- 15.35 **OP-4** Separation of enantiomers by capillary electrophoresis connected with mass spectrometry
Jan Petr, Daniel Baron, Petra Švecová, Andrea Šebestová, Tomáš Pluháček
- 15.50 **OP-5** Chloride, bromide, and TFA determination in the mixture of ionic liquids by CE-C4D
Jelena Gorbatsova, Maria Kuhtinskaja, Evelin Halling, Jekaterina Mazina-Šinkar

16.05 – 16.30 **Coffee break**

16.30 – 18.30 **Youth Session 1**
Chair: Attila Gáspár, Petr Chocholous

- 16.30 **YS-1** Analytical system for monitoring bacterial growth – part 1
Agnieszka Czajkowska, Marta Fiedoruk-Pogrebniak, Kamil Strzelak, Robert Koncki
- 16.45 **YS-2** Flow analysis system for enzymatic determination of selected thiols
Justyna Głowacka, Kamil Strzelak, Robert Koncki
- 17.00 **YS-3** Multicommutated flow analysis system with on-line deproteinization for fluorometric creatinine determination
Iga Malicka, Izabela Lewińska, Łukasz Tymecki
- 17.15 **YS-4** Microfluidic paper-based analytical devices for colorimetric determination of urinary creatinine
Izabela Lewińska, Mikołaj Speichert, Łukasz Tymecki
- 17.30 **YS-5** Functionalization of commercial hydrophilic-lipophilic balanced copolymer for automatic magnetic dispersive micro-solid phase extraction of surface water contaminants
Celestine Vubangsi Gemuh, Burkhard Horstkotte, Petr Solich
- 17.45 **YS-6** Immobilized microfluidic enzymatic reactor with pillar array structure for the rapid digestion of proteins
Cynthia Nagy, Adam Kecskemeti, Attila Gaspar

- 18.00 **YS-7** Novel microfluidic paper-based analytical device for the colorimetric determination of iron in urine samples
Francisca T.S.M. Ferreira, Karina A. Catalão, Raquel B.R. Mesquita, António O.S.S. Rangel
- 18.15 **YS-8** Development of amperometric acetylcholine and choline biosensors based on the spatially separated detection and biorecognition part in flow injection analysis
Sofia Tvorynska, Jiří Barek, Bohdan Josypčuk
-

Wednesday, 30th June 2021

9.00 – 11.00

Session 4

Chair: Marek Trojanowicz, Wolfgang Frenzel

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|-------|-------------|---|
| 9.00 | KL-5 | POTENtit
a software program for potentiometric titrations
<i>Víctor Cerdà, Piyawan Phansi, Kaewta Danchana, Sergio L.C.Ferreira</i> |
| 9.30 | KL-6 | Microfluidic paper-based analytical devices with in-situ air gap for gas separation and its versatility in direct analysis of samples
<i>Duangjai Nacapricha</i> |
| 10.00 | KL-7 | Simul 6 – A fast dynamic simulator of electromigration
<i>Bohuslav Gaš, Petr Bravenec</i> |
| 10.30 | KL-8 | Purpose Made
Capillary Electrophoresis Instrumentation
<i>Jasmine S. Furter, Peter C. Hauser</i> |
-

11.00 – 11.30

Coffee break

11.30 – 13.00

Session 5

Chair: Duangjai Nacapricha, Antonio O.S.S. Rangel

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|-------|-------------|---|
| 11.50 | IL-6 | Lab-In-Syringe automated sample preparation. Looking back and forward
<i>Burkhard Horstkotte, Kateřina Fikarová, Ivana H. Šrámková, Celestine Gemuh Vubangsi, Hana Sklenářová, Petr Solich</i> |
| 11.50 | IL-7 | Flow systems and chemiluminescence detection in the determination of phenolic compounds of plant origin
<i>Edyta Nalewajko-Sieliwoniuk</i> |

12.10	IL-8	Application of flow analysis in surface plasmon resonance spectroscopy - thrombin determination <i>Agnieszka Więckowska</i>
12.30	OP-6	Release of active substances from nanofibers tested in sequential injection system <i>Hana Sklenářová, Martina Háková, Dalibor Šatínský, Petr Solich</i>
12.45	OP-7	Essentials of customization. 3D printed optical detectors <i>Michał Michalec, Łukasz Tymecki</i>

13.00 – 14.00 **Lunch**

14.00 – 15.40 **Session 6**
Chair: Marian Masar, Paweł M. Nowak

14.00	KL-9	Capillary electrophoresis of small molecules: Applications and challenges in pharmaceutical analysis <i>Roman Szucs</i>
14.30	KL-10	From silica capillary to microchip and back to the classic <i>Claudimir Lucio do Lago</i>
15.00	IL-9	Application of pseudostationary phases in capillary electrophoresis <i>Ewa Poboży</i>
15.20	IL-10	Application of microemulsion electrokinetic capillary chromatography to forensic examination of lipsticks <i>Małgorzata Król, Marlena Nowak, Marta Gładysz, Paweł Kościelniak</i>

15.40 – 16.20 **Coffee break**

Poster Session

Chair: Łukasz Tymecki, Ewa Poboży,
Burkhard Horstkotte

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- | | | |
|-------|------------|---|
| 16.20 | P-1 | Comparison of biosensors based on different enzymatic mini-reactors for amperometric detection of uric acid using flow injection analysis
<i>Sofia Tvorynska, Jiří Barek, Bohdan Josypčuk</i> |
| 16.22 | P-2 | 3D-printed optical flow cell fabricated from transparent materials
<i>Mikołaj Sobstel, Łukasz Tymecki, Michał Michalec</i> |
| 16.24 | P-3 | Towards paper-based potentiometric flow sensor for urea determination
<i>Michał Ścibisz, Iga Malicka, Izabela Lewińska, Łukasz Tymecki</i> |
| 16.26 | P-4 | Rational selection of colorimetric urinary protein determination method in paper-based analytical devices and its application to proteinuria diagnostics
<i>Karolina Kurdziałek, Izabela Lewińska, Łukasz Tymecki</i> |
| 16.28 | P-5 | An automatic method based on dispersive liquid-liquid microextraction coupled with optical probe detection for determination of nitrate in vegetable and water samples
<i>Jana Šandrejová, Alina Diuzheva, Renáta Chromá, József Balogh, Vasil Andruch</i> |
| 16.30 | P-6 | Modern analytical applications of an automated system with an Optical Immersion Probe (OIP)
<i>Ján Tóth, Yaroslav Bazel'</i> |
| 16.32 | P-7 | Gilding gold leaf as electrode in electrochemical flow analysis
<i>Paitoon Prasertying, Nanthatchaphon Jantawong, Nuttamon Khoonrueng, Thitaporn Sonsa-ard, Thinnapong Wongpakdee, Duangjai Nacapricha</i> |
| 16.34 | P-8 | Modification of carbon electrode on electrochemical paper-based devices using an electrochemically reduced graphene oxide for enhancement of voltammetric signal
<i>Kitima Sirivibulkovit, Thitaree Pimklang, Pasit Pakawatpanurut, Akhmad Sabarudin, Duangjai Nacapricha, Phoonthawee Saetear</i> |

- 16.36 **P-9** Multicomponent determination based on multilinear regression analysis
Kaewta Danchana, Piyawan Phansi, Kanchana Uraisin, Víctor Cerdà
- 16.38 **P-10** Determination of vancomycin in pharmaceutical products using smart photometric detection system
Karolina Mermer, Justyna Paluch, Grzegorz Siembab, Joanna Kozak
- 16.40 **P-11** Flow-based module for the steam distillation
Justyna Paluch, Joanna Kozak, Iwona Mołęda, Karolina Mermer, Sławomir Kalinowski, Paweł Kościelniak
- 16.42 **P-12** Mechanized flow system for iron speciation analysis in water and white wines
Joanna Kozak, Daniel Kielbasa, Karolina Mermer, Justyna Paluch, Anna Bonczyk, Stanisława Koronkiewicz, Sławomir Kalinowski
- 16.44 **P-13** Development of an in-line enzyme reactor integrated into capillary electrophoresis system
Ruben Szabó, Cynthia Nagy, Attila Gáspár
- 16.46 **P-14** Preconcentration techniques in electrophoretic analysis of thyroid hormones
Piotr Kowalski, Michał Pieckowski, Natalia Miękus, Ilona Ołędzka, Alina Plenis, Anna Roszkowska, Tomasz Bączek
- 16.48 **P-15** Determination of carnitines in milk products by microchip electrophoresis with conductivity detection
Peter Troška, Simona Dobosyová, Marián Masár
- 16.50 **P-16** Development of microchip electrophoresis-ion mobility spectrometry coupling for the analysis of food and biological sample
Marta Đuriš, Jasna Hradski, Marián Masár
- 16.52 **P-17** Determination of inorganic and organic acids in coffee samples using capillary electrophoresis
Branislav Žabenský, Róbert Bodor, Marián Masár

- 16.54 **P-18** Determination of carminic acid in food and pharmaceutical samples by microchip electrophoresis with spectrophotometric detection
Adriána Miškovčíková, Eva Vargová, Jasna Hradski, Marián Masár
- 16.56 **P-19** L-tryptophan metabolites determination with the application of solid phase extraction coupled with capillary electrophoresis diode array detection
Natalia Miękus, Katarzyna Kowalik, Marta Chyla, Ilona Ołędzka, Piotr Kowalski, Anna Roszkowska, Alina Plenis, Natalia Treder, Tomasz Bączek
- 16.58 **P-20** Influence of imidazolium-based ionic liquid on electrophoretic separation of selected biogenic amines
Ilona Ołędzka, Natalia Kaczmarczyk, Natalia Treder, Natalia Miękus, Alina Plenis, Piotr Kowalski, Anna Roszkowska, Tomasz Bączek
- 17.00 **P-21** Application of dried blood spot method in combination with a capillary electrophoresis in detection of psychotropic drugs in blood
Paweł Stelmaszczyk, Magdalena Świądro, Renata Wietecha-Posłuszny, Dominika Dudek
- 17.02 **P-22** Application of micelle-assisted extraction for the analysis of nutmeg using capillary electrophoresis
Aneta Woźniakiewicz, Małgorzata Gołąb, Iwona Biel, Mateusz Gromba, Michał Woźniakiewicz
- 17.04 **P-23** Development of soluble materials for dried blood spot sampling and analysis
Lenka Ryšavá, Jana Dorazilová, Miloš Dvořák, Lucy Vojtová, Petr Sedláček, Pavel Kubáň
- 17.06 **P-24** Characterization of outer membrane vesicles isolated from Pectobacterium strain producing GFP protein
Aleksandra Steć, Joanna Jońca, Agata Płoska, Leszek Kalinowski, Bartosz Wielgomas, Małgorzata Waleron, Krzysztof Waleron, Szymon Dziomba
- 17.08 **P-25** Application of the H-point standard addition method for simultaneous determination of bisphenols in receipts using HPLC-DAD
Paweł Świt, Joanna Orzeł, Michał Daszykowski

- 17.10 **P-26** Development of the method for the determination of oligosaccharides in human milk
Aneta Woźniakiewicz, Justyna Dobrowolska-Iwanek, Marcelina Rusin, Michał Woźniakiewicz
- 17.12 **P-27** Size-based characterization of polysaccharides by Taylor dispersion analysis with photochemical oxidation or backscattering interferometry detections
Phoonthawee Saetear, Laurent Leclercq, Agnès Rolland-Sabaté, Jean-Philippe Biron, Joseph Chamieh, Luca Cipelletti, Darryl J. Bornhop Hervé Cottet
- 17.14 **P-28** Optimized oligosaccharide labelling protocol applying continuous flow catalysis
Felicia Auer, Tamas Bihari, Gellert Sipos, Ferenc Darvas, Gabor Jarvas, Andras Guttman
-

Thursday, 1st July 2021

9.00 – 10.30

V4 Session

Chair: Petr Solich, Joanna Kozak

9.00 **V4L-1 FA** History and current status of Flow analysis in Czech Republic
Petr Solich, Petr Chocholouš, Hana Sklenářová

V4L-1 CE Capillary electrophoresis in Czech Republic
Petr Kubáň, František Foret

9.15 **V4L-2
FA&CE** Flow analysis and capillary electrophoresis in Hungary
Attila Gáspár, András Guttmán, László Hajba

9.30 **V4L-3 FA** Flow analysis in Poland
Łukasz Tymecki

V4L-3 CE Capillary electrophoresis in Poland
Paweł Nowak, Michał Woźniakiewicz

9.45 **V4L-4
FA&CE** Flow analysis and Capillary electrophoresis in Slovakia
Jana Šandrejová, Marián Masár, Jasna Hradski

10.00 – 10.30

Panel discussion V4

Chair: Michał Woźniakiewicz, Łukasz Tymecki

10.30 – 11.00

Coffee Break

11.00 – 12.15

Youth session 2

Chair: Cari Sanger van de Griend, Petr Kuban

11.00 **YS-9** A comparison of bare silica and coated capillaries for CZE-MS
analysis of intact proteins
*Narmin Hamidli, Andras Melinda, Nagy Cynthia,
Gaspar Attila*

11.15	YS-10	Application of separation techniques in diagnostics of gastroesophageal reflux disease <i>Věra Dosedělová, Markéta Laštovičková, Jiří Dolina, Štefan Konečný, Petr Kubáň</i>
11.30	YS-11	Determination of atropine and scopolamine by CE-C4D in drugs and plant extracts <i>Małgorzata Gołąb, Martyna Przybyłowska, Petr Kubáň, Petra Itterheimová, Michał Woźniakiewicz</i>
11.45	YS-12	Application of capillary electrophoresis for examination of disperse dyes extracted from fibers <i>Anna Saldan, Małgorzata Król, Michał Woźniakiewicz, Paweł Kościelniak</i>
12.00	YS-13	Investigation of short-chain fatty acids profiles in human faeces by the capillary electrophoresis <i>Olga Kaczmarczyk, Aneta Woźniakiewicz, Justyna Dobrowolska-Iwanek, Paweł Paško, Agnieszka Dąbek-Drobny, Paweł Zagrodzki, Małgorzata Zwolińska-Wcisło, Michał Woźniakiewicz</i>

12.15 – 13.30

Lunch

13.30 – 15.15

Session 7

Chair: Victor Cerda, Hana Sklenářová

13.30	KL-11	Expert flow analyzers <i>Elias A.G. Zagatto, Fábio R.P. Rocha</i>
14.00	KL-12	Use of sorbent materials in flow-based modes for the determination of metal ions in recreational waters <i>Antônio O.S.S. Rangel, Raquel B.R. Mesquita</i>
14.30	OP-8	Use of a polymer inclusion membrane and a chelating resin for the flow-based multi-determination of metals in waters and soil leachates <i>Tânia C.F. Ribas, Charles F. Croft, M. Inês, G. S. Almeida, Raquel B.R. Mesquita, Spas D. Kolev, Antônio O.S.S. Rangel</i>

14.45	OP-9	Kinetic-potentiometric determination of boron in honey using a sequential injection system with integrated [BF ₄] ⁻ sensor <i>Maksym Fershal, Halyna Yankovych, Yaroslav Bazel</i>
15.00	OP-10	Automation of switchable-hydrophilicity solvent liquid-phase microextraction based on in-syringe concept <i>Pochivalov Aleksei, Christina Vakh, Andrey Bulatov</i>

15.15 – 15.45 **Coffee break**

Session 8

13.30 – 15.15
Chair: Elias A.G. Zagatto,
Edyta Nalewajko-Sieliwoniuk

15.45	KL-13	The role of flow injection analysis and related techniques in atmospheric research and air pollution surveillance <i>Wolfgang Frenzel</i>
16.15	OP-11	Analytical system for monitoring bacterial growth – part 2 <i>Marta Fiedoruk-Pogrebniak, Agnieszka Czajkowska, Dorota Korsak, Kamil Strzelak, Robert Koncki</i>
16.30	OP-12	Lactate determination under flow analysis conditions for clinical and microbiological purposes <i>Kamil Strzelak, Justyna Głowacka, Dorota Korsak, Robert Koncki</i>
16.45	OP-13	Flow system with direct injection detector for the DPASV determination of cadmium and lead in water <i>Paweł Knihnicki, Bartłomiej Kusior, Jolanta Kochana, Paweł Kościelniak</i>

17.00 – 17.30 **Closing remarks**
Paweł Kościelniak



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