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# **Programme of the 21st International Students Conference “Modern Analytical Chemistry”**

Prague, 18—19 September 2025



**FACULTY OF SCIENCE**  
Charles University

Prague 2025




## General Information

The **conference will be held** at the Institute of Chemistry, Faculty of Science, Charles University (Hlavova 2030/8, 128 00 Prague 2) in the lecture hall CH1 (Brauner Theatre).

**Registration** will take place at the entrance to the building. It will be open on Thursday, September 18 from 7:30 to 8:20. Please contact the organizers in advance if you require for later registration.

**Oral presentations** are limited to **15 minutes**, including discussion. Speakers are kindly asked to upload their PowerPoint presentations to the local computer in the lecture hall before the start of their session. We ask participants to adhere to the scheduled starting and finishing times indicated in the programme. The letter “P” followed by a number refers to the page of the abstract/contribution in the *Proceedings*.

**Online participation** is possible via Google Meet and require only an internet connection, a microphone, and a speaker. The link is: <https://meet.google.com/dmn-hzuz-pvj> Please keep your speakers muted during your presentation to avoid unwanted echoes. Online presentations are indicated in the programme by the symbol .

Each session will be chaired by a designated conference participant. The **chairperson's responsibilities** include introducing each speaker, keeping track of time, and moderating and encouraging discussion after each presentation.

**Coffee breaks** will take place in the lecture hall.

**Lunch** will be served in the room G1 (the third door on the left from the main entrance) in the building Albertov 6 (directly opposite the Institute of Chemistry). A joint departure for lunch will be organized. The menu can be found on page 10.

**Wi-Fi** is available in the building; please use your Eduroam account to connect.

## Sponsors

The organizers of the 21st International Students Conference “Modern Analytical Chemistry” gratefully acknowledge the generous sponsorship of following companies:



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## Programme

### Thursday, September 18, 2025

7:30–8:20 **Registration of participants**

8:20–8:30 **Opening ceremony, welcoming address**

**Session 1** • chairperson: Mr Peter Čambal

8:30–8:45 Ms Marcelina Rusin (Jagiellonian University, Poland): *Development of an LC-MS method for the analysis of oligosaccharide profile in human milk* (P 76)

8:45–9:00 Ms Svetlana Pucovski (Charles University, Czech Republic): *Development of Cu-film modified silver solid amalgam electrode for voltammetric analysis of fluoren-9-one* (P 75)

9:00–9:15 Ms Martina Piroutková (University of Pardubice, Czech Republic): *Fractional factorial optimization of methylmercury determination and regional discrimination in marine organisms* (P 72)

9:15–9:30 Mr Martin Koall (University of Regensburg, Germany): *Using non-aqueous capillary electrophoresis with amperometric detection in veterinary drug analysis* (P 51)


9:30–9:45 Mr Karel Snášel (Mendel University, Czech Republic): *A novel chemiluminescence point-of-need prototype for rapid adiponectin detection* (P 80)

9:45–10:00 Ms Joanna Pluta (Jagiellonian University, Poland): *Determination of organic acid anions in fermented food samples using capillary electrophoresis: A functional approach to gut health supplementation* (P 73)

10:00–10:15 Mr Jaroslav Přikryl (Charles University, Czech Republic): *Study of thermal-induced chemical transformations of hop essential oils in model samples* (P 15)

10:15–10:30 **Coffee Break**

**Session 2** • chairperson: Mr Martin Koall

10:30–10:45  Mr Karol Kubacki (Jagiellonian University, Poland): *Determination of antibiotics using silver nanoparticles and smartphone-based detection* (P 55)

10:45–11:00 Mrs Barbora Mudrová (Charles University, Czech Republic): *A sensitive UHPLC-MS/MS method for simultaneous quantitation of topotecan lactone and carboxylate in plasma and vitreous and its application in hydrogel implant drug delivery* (P 66)

- 11:00–11:15  Ms Oliwia Świerczyna (Jagellonian University, Poland):  
*EDTA-stabilised silver nanoparticles as a tool for Fe(II) ion detection* (P 82)
- 11:15–11:30 Ms Lucie Dostálková (Charles University, Czech Republic):  
*Use of analytical methods for the oxidation mechanisms of synthetic selaginipulvins study* (P 38)
- 11:30–11:45  Mr Maksymilian Woryna (Jagellonian University, Poland):  
*Smartphone-assisted fluorescent detection of chloride ions on a paper-based microfluidic platform* (P 87)
- 11:45–12:00 Ms Kristýna Havelková (University of Chemistry and Technology in Prague, Czech Republic): *Electrolytic fingerprint visualization on metals: Comparing the effectiveness of methylene blue* (P 3)
- 12:00–12:15 Ms Nikola Hurychová (Charles University, Czech Republic):  
*Mass spectral structure elucidation by neural network model: A proof of concept demonstrated on esters* (P 10)
- 12:15–13:00 **Lunch**
- Session 3** • chairperson: Ms Lenka Jánošíková
- 13:00–13:15 **Presentation of Sponsor:** Mr. Martin Mach (ALS Czech Republic): *ALS: Right solutions. Right partner. Right employer.*
- 13:15–13:30 **Presentation of Sponsor:** Mgr. Ondřej Šabacký (Optik Instruments): *New technologies in vibrational spectrometry*
- 13:30–13:45 **Presentation of Sponsor:** RNDr. Radim Geryk, Ph.D. (Quinta Analytica) *Troubleshooting HPLC–MS/MS in bioanalysis: Practical solutions for common problems*
- 13:45–14:00 **Presentation of Sponsor:** doc. RNDr. Marek Minárik, Ph.D., MBA (Watrex): *A new generation of benchtop systems for automation of sample preparation*
- 14:00–14:15 Ms Nikol Vlčková (Charles University, Czech Republic):  
*A novel atmospheric pressure glow discharge-based hydride atomizer for atomic absorption spectrometry* (P 20)
- 14:15–14:30 Ms Tímea Dérerová (Charles University, Czech Republic):  
*Novel HPLC buffer blending method for weak electrolyte  $pK_a$  determination* (P 37)
- 14:30–14:45 Ms Anna Sałdan (Jagellonian University, Poland): *Forensic differentiation of black polyester fibers: a comprehensive study* (P 78)
- 14:45–15:00 **Coffee Break**

**Session 4** • chairperson: Mr Dominik Müller

- 15:00–15:15 Ms Aleksandra Zalewska (AGH University of Science and Technology Kraków, Poland): *Design and characterization of 3D-printed potentiometric sensor platforms* (P 90)
- 15:15–15:30 Ms Anna Michl (Charles University, Czech Republic): *Advancing gut microbiome metabolomics: A derivatization-based approach* (P 63)
- 15:30–15:45 Ms Sandra Chmiel (University of Lodz, Poland): *Application of boron-doped diamond electrode for the determination of penoxulam* (P 35)
- 15:45–16:00 Ms Ghazaleh Kholafazadehastamal (Charles University, Czech Republic): *Electrochemical performance of additively manufactured metal meshes with doped diamond coatings* (P 50)
- 16:10–16:15 Ms Monika Wypych (University of Lodz, Poland): *Chemometric insight into spiciness of hot peppers* (P 88)

**Friday, September 19, 2025****Session 5** • chairperson: Mr Tomáš Lener

- 8:30–8:45 Ms Joanna Zontek-Wilkowska (Jagiellonian University, Poland): *Application of the atomic absorption spectroscopy method to monitor the content of bio-elements in natural biological material with sorption properties (biomass from in vitro cultures* (P 92)
- 8:45–9:00 Mr Fazal Wahab (Charles University, Czech Republic): *Development of structured boron-doped diamond electrodes for anodic oxidation of phenol* (P 85)
- 9:00–9:15 Mr Karel Bartoš (Charles University, Czech Republic): *Application of analytical techniques in assessing biochar interactions with soil environment and contaminants* (P 31)
- 9:15–9:30 Ms Aulia Ratri Hapsari (University of Birmingham, United Kingdom): *Immobilisation of single-stranded DNA capture probes on a chitosan leaky waveguide designed to detect single-stranded circulating tumour DNA biomarkers* (P 94)
- 9:30–9:45 Ms Kornelia Mikłasz (Gdańsk University of Technology, Poland): *Comparison of succinite from various geological deposits using molecular spectroscopy* (P 65)
- 9:45–10:00 Ms Oleksandra Labzova (University of Chemistry and Technology in Prague, Czech Republic): *A combined microextraction-voltammetric method for determination of trazodone in biological fluids* (P 57)

- 10:00–10:15 Ms Agnieszka Kowaluk (Nicolaus Copernicus University in Toruń, Poland): *Analysis of macro- and microelements and heavy metals in confectionery products using the ICP-MS method after extraction with deep-eutectic solvents* (P 53)
- 10:15–10:30 **Coffee Break**
- 10:30–10:45 **Session 6** • chairperson: Ms Sandra Chmiel  
Mr Tomáš Lener (Charles University, Czech Republic): *RP-HPLC method development and analysis of twelve expired analgesic preparations from the 20th century* (P 59)
- 10:45–11:00 Mr Peter Čambal (Charles University, Czech Republic): *An electrochemical study of pinene* (P 34)
- 11:00–11:15 Ms Barbara Bilandžija (University of Zagreb, Croatia): *Optimization of suspension preparation for elemental analysis of topical formulations using TXRF and Box–Behnken design* (P 32)
- 11:15–11:30 Mr Martin Šefčík (Charles University, Czech Republic): *Studying electrochemical oxidative degradation of venlafaxine in lab-scale 3D-printed cells* (P 79)
- 11:30–11:45 Ms Simona Adamová (Charles University, Czech Republic): *Determination of silver nanoparticles in products of personal hygiene* (P 29)
- 11:45–12:00 Mr Michał Świdorski (University of Łódź, Poland): *Application of 3D printing technology for the production of working paste electrodes* (P 81)
- 12:00–12:15 Ms Sofiia Ivakh (Charles University, Czech Republic): *Expanding the potential of printed electrodes for portable electrochemical sensing* (P 47)
- 12:15–13:00 **Lunch**
- 13:00–13:15 **Session 7** • chairperson: Ms Barbara Bilandžija  
Mrs Michaela Heinzka (Mendel University, Czech Republic): *Automation of biosensor preparation based on screen printed electrode* (P 44)
- 13:15–13:30 Mr Dominik Müller (AGH University of Science and Technology, Poland): *Assay of selected micro- and macroelements in biomaterials: poly- $\gamma$ -glutamic acid enriched *Pleurotus spp.* mycelia from in vitro cultures* (P 68)
- 13:30–13:45 Mr Aashutosh Dube (Charles University, Czech Republic): *Reductive electrochemical grafting of carbon-based electrodes by 4-nitrobenzenediazonium salt* (P 40)
- 13:45–14:00 Ms Martyna Drużyńska (AGH University of Science and Technology, Poland): *Nitrate detection using a single-piece electrode based on a black PVC membrane* (P 39)



- 14:00–14:15 Ms Summra Ahmed (Palacký University, Czech Republic): *Improvement in native mass spectrometry: Optimization of ESI-emitters* (P 30)
- 14:15–14:30 Mr Jesse Namu Ombugadu (Warsaw University of Technology, Poland): *Unlocking soapwort's secrets: Tracking saponins via liquid chromatography-mass spectrometry* (P 70)
- 14:30–14:45 Ms Daria Lavryshchieva (University of Chemistry and Technology in Prague, Czech Republic): *Conformational analysis of selected kratom alkaloids using NMR spectroscopy* (P 58)
- 14:45–15:00 **Coffee Break**
- Session 8 •** chairperson: Ms Martina Piroutková
- 15:00–15:15 Ms Maryia-Mazhena Dzemidovich (University of Lodz, Poland): *Indirect electroanalysis of anticancer drug docetaxel at liquid/liquid interfaces using thin organic film electrode platform* (P 41)
- 15:15–15:30 Ms Lucie Pražáková (Charles University, Czech Republic): *Comparison of on-line and off-line approaches to monitoring drug degradation* (P 74)
- 15:30–15:45 Ms Lenka Jánošíková (University of Chemistry and Technology, Czech Republic): *Prostate cancer diagnosis based on chemical analysis of human scent* (P 48)
- 15:45–16:00 Mr Zhendong Lyu (Charles University, Czech Republic): *Identification of volatile species of iridium and rhodium generated by photochemical vapor generation using direct analysis in real time mass spectrometry* (P 61)
- 16:00–16:15 Mr Vojtěch Vilím (Charles University, Czech Republic): *Racemization of animal glue in paintings* (P 83)
- 16:15–16:30 Ms Simona Horkelová (Charles University, Czech Republic): *Method development for antibody analysis by CZE: From UV detection towards native CE-MS* (P 45)
- 16:30–16:35 **Closing ceremony**

## Lunch

Lunch will be served in the room G1 (the third door on the left from the main entrance) in the building Albertov 6 (directly opposite the Institute of Chemistry). A joint departure for lunch will be organized.

Lunch will be provided for the following participants who requested it during registration:

Ms Summra Ahmed (veg.)  
Ms Barbara Bilandžija  
Ms Lucija Bilandžija  
Mr Peter Čambal  
Ms Tímea Dérerová (veg.)  
Ms Lucie Dostálková  
Ms Martyna Drużyńska  
Mr Aashutosh Dube (veg.)  
Ms Maryia-Mazhena Dzemidovich  
Ms Aulia Ratri Hapsari (veg.)  
Ms Kristýna Havelková (veg.)  
Mrs Michaela Heinzka  
Ms Simona Horkelová  
Ms Nikola Hurychová  
Ms Sandra Chmiel  
Ms Sofiia Ivakh (veg.)  
Ms Lenka Jánošíková  
Ms Ghazaleh Kholafazadehastamal  
Ms Agnieszka Kowaluk

Ms Oleksandra Labzova  
Ms Daria Lavryshchieva  
Mr Tomáš Lener  
Mr Zhendong Lyu  
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Mr Jesse Namu Ombugadu  
Ms Martina Piroutková  
Ms Lucie Pražáková  
Ms Svetlana Pucovski  
Mr Karel Snášel  
Mr Michał Świdorski  
Mr Martin Šefčík  
Mr Vojtěch Vilím  
Ms Nikol Vlčková  
Mr Farzal Wahab (veg.)  
Ms Monika Wypych  
Ms Aleksandra Zalewska  
Mrs Joanna Zontek-Wilkowska

## Menu

### Thursday, September 18, 2025

- Potato gnocchi with chicken, broccoli, cream sauce, and Grana Padano.
- *vegetarian*: Creamy zucchini risotto with Grana Padano.

### Friday, September 19, 2025

- Caprese-style chicken breast with mashed potatoes.
- *vegetarian*: Roasted vegetables with couscous and herb dip.



