

SCIENTIFIC PROGRAM

MONDAY, APRIL 13, 2026

AURELIUS HALL

12:45–13:00 OPENING CEREMONY

Chairpersons: F. Svoboda, R. Hrdina, M. Veselý

12:45 Opening ceremony

František Svoboda | UCT Prague, President of the Czech Society of Industrial Chemistry

Radim Hrdina | FCHT University of Pardubice

Martin Veselý | UCT Prague

12:55 Viktor Ettel Award

13:00–15:00 PLENARY SESSION

Chairpersons: F. Svoboda, I. Souček

13:00 The situation on the Czech energy market, outlook for the future, the effect of emission allowances on the chemical industry

Pavel Řežábek, Chief Economist, ČEZ

13:30 Biomass as a renewable alternative to fossil sources and its limits

Josef Trögl, Vice-Dean, Faculty of Environmental Sciences,

Jan Evangelista Purkyně University

14:00 Profitable solutions for conversion of crude to chemicals – Lummus Technology

Rutger Theunissen, Lummus Technology, Chief Business Officer

14:30 Panel Discussion on the plenary lectures

Moderator: Martin Veselý

Panelists:

Pavel Řežábek, Chief Economist, ČEZ

Josef Trögl, Vice-Dean, Faculty of Environmental Sciences,

Jan Evangelista Purkyně University

Rutger Theunissen, Lummus Technology, Chief Business Officer

MONDAY, APRIL 13, 2026

FOYER + AURELIUS HALL

15:00–18.00 **POSTER SESSION, COFFEE BREAK**

Chairperson: P. Krystyník, Ústí nad Labem

The poster session program can be found on pages 27 – 33.

We ask the authors to be present at their posters at least from 15:00 to 16:30.

AURELIUS HALL

18:00 **The Best Poster Award**

CABERNET HALL

16:00–18:00 **Round table**

Steps and topics for cooperation between public administration, research and industry

Chairpersons: I. Souček, E. Muřický, F. Svoboda

Participation in this round table is by invitation only.

CONFERENCE FOYER

18:15 **Welcome drink**

TUESDAY, APRIL 14, 2026

CABERNET HALL

8:05–15:00 **OIL, COAL, NATURAL GAS, ALTERNATIVE RAW MATERIALS**

Chairpersons: M. Hájek (Pardubice), J. Kocík (Litvínov)

8:00–8:15

OP-1 **Current activities of CTP SUSCHEM**

M. Šilhan (Prague)

8:15–8:30

OP-2 **Improving cold flow properties of biodiesel: Effects of feedstock composition, amides, and blending strategies**

M. Hájek¹, P. Kuchyřníka², J. Vagunda¹, T. Hájek¹, K. Dvořáková¹ (¹Pardubice, ²Liberec)

8:30–8:45

OP-3

Sustainable production of advanced biofuels via co-processing of selected non-food feedstocks with atmospheric gas oil

M. Slezáčková, J. Mikulec, A. Peller, L. Danč (Bratislava)

8:45–9:00

OP-4

Analysis of sustainable aviation fuels and prediction of HEFA content using ATR-FTIR and GC×GC-MSFID

F. Sihlovec, D. Vrtiška, M. Auersvald, P. Šimáček (Prague)

9:00–9:15

OP-5

From classical titration to a smart laboratory: Automated determination of TAN and TBN on the OMNIS platform

P. Majzlík, P. Barath (Prague)

9:15–9:30

OP-6

High-resolution mass spectrometry for the characterization of complex oxygenated mixtures

M. Staš, S. Erhart, J. Chudoba (Prague)

9:30–10:00

OP-7 / KL

The presence and future of the steam cracking in Europe

J. Doskočil (Litvínov)

10:00–10:30

Coffee break

10:30–10:45

OP-8

Application of coke mass balance for evaluating the impact of a power outage on steam cracker pyrolysis heaters

P. Vitiska, P. Michalička, O. Ottenschläger (Litvínov)

10:45–11:00

OP-9

Experience in the design and construction of chemical process units

J. Hlaváč, K. Kosorú (Prague)

11:00–11:30

OP-10 / KL

Achieving climate goals from an industrial perspective

M. Hájek (Prague)

11:30–11:45

OP-11

Model based optimization of district heating network operation

N. F. Turinič, K. Valiyeva, M. Variny (Bratislava)

11:45–12:00

OP-12

The consequences of waste plastic pyrolysis oil addition on naphtha pyrolysis yields

P. Michalička, P. Vitiska, O. Ottenschläger (Litvínov)

12:00–12:15

OP-13

Full-scale experiments at steam cracker unit

B. Baranová, J. Doskočil (Litvínov)

12:15–12:30

OP-14 **Pyrolysis of Tetrapak**
V. Vyskočil, M. Auersvald (Prague)

12:30–14:00 **Lunch**

14:00–14:15

OP-15 **Upgrading of plastic pyrolysis oil to steam cracking feedstock**
M. Auersvald^{1,2}, P. Straka¹, V. Vyskočil¹, A. J. Abdulrahman², A. Zayoud^{2,3}, K. M. Van Geem² (¹Prague, ²Ghent, ³Pryme Clean Tech)

14:15–14:30

OP-16 **Steps toward sustainability in petrochemical production: Focusing on renewable bio-alcohols**
J. Kocik¹, J. Vagunda², K. Soukup³, J. Moravčík³, L. Kaluža³, K. Frolich², M Hájek² (¹Litvínov, ²Pardubice, ³Prague)

14:30–14:45

OP-17 **Selective dehydrogenation of bioethanol on Cu/LiAl mixed oxides**
J. Vagunda, K. Frolich, M. Hájek (Pardubice)

14:45–15:00

OP-18 **Chemical recycling as an alternative source of raw materials for petrochemistry.**
R. Pjatkan (Prague)

15:00–18:00 **SYNTHESIS AND PRODUCTION OF PHARMACEUTICALS**

Chairperson: P. Zámotný (Prague)

15:00–15:30

PT-1 / KL **Unlocking the secrets of pharmaceutical powders using inverse gas chromatography**
A. Kutějová, M. Cír, N. Studničková, T. Školáková (Prague)

15:30–15:45

PT-2 **Role of Seeded Crystallization in Process Control and Morphological Stability**
R. Gabriel¹, M. Kahajová² (¹Opava, ²Olomouc)

15:45–16:00

PT-3 **Itaconic acid derivatives: From polymers to immunomodulating and antimicrobial agents**
E. Šíkorová, J. Straková, A. Chlubnová, K. Krátká, K. Konečná, M. Krátký (Hradec Králové)

16:00–16:15

PT-4 **API Polymorphism: Science, risks, and patent power**
A. Benýšek Bártová, L. Filipová, T. Dostálová (Opava)

16:15–16:45 **Coffee break**

16:45–17:00

PT-5 **1,3,5-Triazines and their synthetic-biology potential**
V. Milata, B. Pavílek, D. Bortňák, D. Végh, M. Šuplíková (Bratislava)

17:00–17:15

PT-6 **From variability to predictability: A DoE-driven insight into pharmaceutical blending**
D. Novák, E. Zelina, P. Stasiak, P. Zámotný (Prague)

17:15–17:30

PT-7 **Mitigating process-induced degradation in active pharmaceutical ingredients via high-energy co-processing and structural embedment**
M. Švichký, J. Patera, J. Heřt (Prague)

17:30–17:45

PT-8 **Total synthesis of 16-F Tafluprost as process impurity**
K. Pauk¹, A. Imramovský¹, J. Pavlík² (¹Pardubice, ²Neratovice)

17:45–18:00

PT-9 **Mihulka – defensive and powder tower, alchemists, iatrochemists, and pharmaceutical company**
B. Kratochvíl (Prague)

TUESDAY, APRIL 14, 2026

PÁLAVA HALL

8:00–11:30

ECONOMY OF THE CHEMICAL INDUSTRY IN NEW CONDITIONS

Chairpersons: J. Vávra, L. Branská (Pardubice), D. Čámská (Prague)

8:00–8:15

E-1 **A manager's view of current economic trends in the oilseed industry in the Czech Republic**
M. Kuncíř (Lovosice)

8:15–8:30

E-2 / KL **Chemical trends EU in 2025**
I. Souček (Prague)

8:30–8:45

E-3 **Impact of energy crisis on performance of the Czech largest chemical enterprises**
D. Camska, J. Klecka (Prague)

8:45–9:00

E-4 **Purchasing behaviour in the consumer chemicals market in the context of trust, customer scepticism and greenwashing**
S. Munzarová, J. Vojtěch, M. Jelínková, T. Koláčná (Pardubice)

9:00–9:15

E-5 The importance of environmental attributes in consumer chemical product offerings: A consumer perspective

L. Branska, M. Patak, V. Loudova (Pardubice)

9:15–9:30

E-6 Behavioral determinants of CSR communication: A systematic literature review of the theory of planned behavior and implications for industries under increased reputational pressure

M. Gorčík, L. Tetřevová (Pardubice)

9:30–9:45

E-7 Deceptive communication and crisis reputation management in the chemical industry

T. Koláčná, M. Jelínková, S. Munzarová, J. Vojtěch (Pardubice)

9:45–10:00

E-8 Sustainable project management and industry 5.0: Analysis of application and barriers in the Czech chemical industry

J. Košťálová, P. Pavlíček, J. Vávra (Pardubice)

10:00–10:30 Coffee break

10:30–10:45

E-9 Case studies of industry 4.0 in the Czech chemical industry

J. Klecka, D. Camska (Prague)

10:45–11:00

E-10 Sustainable strategies and corporate social responsibility in the beverage industry

M. Znamínková, L. Tetřevová (Pardubice)

11:00–11:15

E-11 The economic relevance of biodiversity for chemical companies

J. Vávra, L. Vyvážilová (Pardubice)

11:15–11:30

E-12 Identification of selected elements of higher education reform in the Slovak Republic aimed at increasing the productivity of industrial production.

M. Zatrochová, A. Lisník (Bratislava)

11:30–16:15 MATERIALS AND PROCESS ENGINEERING

Chairpersons: P. Novák, A. Michalcová (Prague)

11:30–12:00

MPE-1 / KL Laser shock peening for enhanced fatigue and tribocorrosion performance of conventional and additively manufactured metallic alloys

P. Kesavan (Ostrava)

12:00–12:15

MPE-2 Mechanical alloying as a way to non-conventional materials

P. Novák¹, A. Michalcová¹, F. Průša¹, J. Duda¹, J. Jeniček¹, K. Skotnicová², I. Szurman² (¹Prague, ²Ostrava-Poruba)

12:15–12:30

MPE-3 Low temperature synthesis of GeTe nanoparticles and their characterization

M. Bouška¹, Y. Milasheuskaya¹, R. Jambor¹, P. Malinský², P. Němec¹ (¹Pardubice, ²Husinec-Řež)

12:30–14:00 Lunch

14:00–14:15

MPE-4 Investigation of the influence of doping tellurite glasses with CuO as colorant for direct laser writing

A. Vanická¹, P. Knotek¹, J. Schwarz¹, F. Šimíček¹, J. Smolík¹, P. Kutálek¹, R. Yatskiv², P. Kostka² (¹Pardubice, ²Prague)

14:15–14:30

MPE-5 Structure and properties of electroformed biodegradable iron

T. Balický, Š. Msallamová, I. Voňavková, Z. Hrdlička, D. Vojtěch (Prague)

14:30–14:45

MPE-6 In situ TEM and molecular dynamics analysis of sintering mechanisms in nickel nanoparticles

N. Štaffenová¹, L. Bajtošová¹, E. Chocholáková¹, J. Hanuš¹, J. Fikar², M. Cieslar¹ (¹Prague, ²Brno)

14:45–15:00

MPE-7 Effect of heat treatment on the microstructure and mechanical properties of NiTi–TiC composite for ballistic protection applications

T. Vrba, F. Růžicka, P. Kratochví, J. Zima, F. Průša (Prague)

15:00–15:15

MPE-8 Scalable magnetron-sputtered copper-based 3D nanostructures

E. Chocholáková, N. Štaffenová, L. Bajtošová, J. Hanuš, M. Cieslar (Prague)

15:15–15:30

MPE-9 Numerical simulation of maize kernel popping–popcorn production in fluidized bed reactor

M. Vashchenchuk, T. Kurák (Bratislava)

15:30–15:45

MPE-10 Assessing the options for C3 fraction distillation intensification by its hybridization

M. Variny, D. Hribík (Bratislava)

15:45–16:00

MPE-11 Scale-up of nitrogen-doped graphene for high-performance supercapacitors

V. Šedajová¹, M. Otyepka^{1,2}, T. Zedníček¹, A. Hladký¹ (¹Lanškroun, ²Olomouc)

16:00–16:15

MPE-12 Circular deconvolution via mollification for RTD recovery in chemical engineering

*M. Petrov¹, M. Karamehmedović², P. Maréchal³
(¹Bratislava, ²Lynaby, Denmark, ³Toulouse, France)*

16:15–16:45 Coffee break

16:45–18:30 MATERIALS AND PROCESS ENGINEERING

Chairpersons: T. Opravil (Brno), T. Jirout (Prague)

16:55–17:00

MPE-13 Simplified model of wall-to-bed heat transfer in liquid-solid fluidised bed

E. Korbel, B. Šiška, L. Dušek (Pardubice)

17:00–17:15

MPE-14 Characterization of plain and infiltrated TiAlV scaffolds

*A. Michalcová¹, V. Balejová¹, V. Ryukhtin², G. Farkas², L. Koláčny¹, M. Veselý¹,
D. Vojtěch¹ (¹Prague, ²Řež)*

17:15–17:30

MPE-15 CsPbBr₃ hybrid materials: From polymer composites to borophosphate glass hosts

*T. Hostinský^{1,2}, J. Zich^{1,2}, J. Fath¹, A. Mašláni¹, S. Sharma¹, V. Sikarwar¹,
P. Mošner², M. Bury¹ (¹Prague, ²Pardubice)*

17:30–17:45

MPE-16 Vitreoretinal tamponades as ocular materials: From silicone oils to hydrogels

*B. Kamenická, V. Pěnkavová, E. Lyko Vachková, S. Orvalho, M. Zedníková,
N. Jaklová, P. Stavárek, M. Reháčková, P. Rajs, M. Veith, P. Klusoň (Prague)*

17:45–18:00

MPE-17 Scientific and technological challenges in the field of anti-corrosion agents

*R. Hrdina, A. Kalendová, L. Burgert, G. Sádovská, P. Honcová, P. Bělina,
I. Brožková, P. Motková, M. Vyržalová, M. Bouška, A. Krejčová, M. Genovez
(Pardubice)*

18:00–18:30

MPE-18 / KL Joining high-entropy ceramics with high-entropy alloys formed by the same refractory metals.

*I. Dlouhý¹, Z. Chlup¹, F. Šiška¹, H. Hadraba¹, N. Hosseini², F. Valenza³,
M. Hnatko², P. Tatarko², P. Šajgalík² (¹Brno, ²Bratislava, ³Genoa, Italy)*

8:00–15:30

BIOTECHNOLOGY AND BIOREFINERY*Chairpersons: P. Patáková, B. Branská (Prague)*

8:00–8:30

BIO-1 / KL Waste-based biorefineries: Unlocking the potential of residual biomass for a sustainable circular economy*H. Schneider (Villingen-Schwenningen, Germany)*

8:30–8:45

BIO-2 Resilience of activated sludge to wastewater from partial oxidation process: Impacts, inhibition and adaptation*T. Kochová^{1,2}, J. Bindzar², M. Pečenka², M. Nechanická³ (¹Litvinov, ²Prague, ³Liberec)*

8:45–9:00

BIO-3 Feathers, grains, and microbes: New strategies for concrete waste recycling*H. Ottová, V. Nežerka, P. Holeček, K. Demnerová, H. Stiborová (Prague)*

9:00–9:15

BIO-4 Enhancing biorefinery control and operation with a new training simulator*C. Appl¹, F. Baganz², V. C. Hass^{1,2,3} (¹Hamburg, Germany, ²London, UK, ³VS-Schwenningen, Germany)*

9:15–9:30

BIO-5 Principle(s) of antimicrobial activity of Monascus pigments*P. Patáková (Prague)*

9:30–9:45

BIO-6 In-silico study to analyze hotspot residues of Monascus pigments binding with Clostridium beijerinckii germination protein for antimicrobial effects*S. Roy¹, V. Pankaj¹, I. Bhogal¹, P. Patáková², B. Branská², K. Sedlář¹ (¹Brno, ²Prague)*

9:45–10:00

BIO-7 Effect of natural and synthetic materials' surface topography on bacterial cell adhesion*K. Navrátilová¹, V. Peroutka¹, V. Jenčová², D. Lukáš², S. Lencová¹ (¹Prague, ²Liberec)*

10:00–10:30

Coffee break

10:30–11:00

BIO-8 / KL Synthetically primed adaptation of bacterial catalysts to non-native renewable substrates*B. Burýšková, B. Popelářová, D. Bujdoš, T. Botka, B. Gavendová, M. Benešik, P. Dvořák (Brno)*

11:00–11:15

BIO-9

Rational transporter engineering outperforms adaptive evolution for glucose utilization in thermophilic *Caldimonas thermodepolymerans*

A. Ieremenko¹, M. Silva¹, M. Rosputinský¹, X. Hájková¹, T. Botka¹, J. Horačková², D. Bednář², S. Obruča¹, D. Šafránek¹, P. Dvořák¹
(¹Brno, ²Kamenice)

11:15–11:30

BIO-10

Transcriptomic response of *Clostridium beijerinckii* NRRL B-598 to lignocellulose-derived inhibitors

K. Sabatova¹, K. Koppova², B. Branska², P. Patakova², K. Sedlar¹
(¹Brno, ²Prague)

11:30–11:45

BIO-11

In-depth insights into establishing programmable and efficient autolysis for *Pseudomonas putida* biotechnology

M. Pešta, M. Silva, S. Juračka, M. Benešik, P. Dvořák (Brno)

11:45–12:00

BIO-12

PHAntastic enzymes and where to find them

K. Sedlar, I. Buchtikova, K. Hermankova, X. Hajkova, K. Sabatova, K. Slosarova, S. Obruca (Brno)

12:00–12:15

BIO-13

Characterization of PHA synthase and PHA depolymerase enzymes from the thermophilic bacterium *Caldimonas thermodepolymerans*

H. Majerová, M. Benešik, J. Krouská, P. Sedláček, P. Dvořák (Brno)

12:15–12:30

BIO-14

Biotechnological potential of iron-enriched yeast biomass for the production of bioactive metabolites

J. Obračaj, J. Holub, D. Špačková, N. Gerspitzerová, J. Pořízka, R. Mikulíková, I. Márová (Brno)

12:30–14:00 Lunch

14:00–14:15

BIO-15

Endophytic bacillus atrophaeus as a promising sustainable biocontrol agent against fungal phytopathogens

T. Bočková, J. Špaček, P. Lovecká (Prague)

14:15–14:30

BIO-16

Impact of fumaric acid-chitosan application on aroma compounds in Tokaj wines as a sustainable bioprotection strategy for reducing sulfur dioxide use

Z. Bene¹, V. Sziksz², L. Kőrösi³, Z. Madaras⁴ (¹Eger, ²Budapest, ³Pécs, Hungary)

14:30–14:45

BIO-17

Optimized parametric study of watermelon seed oil biodiesel production via kaolin-supported zeolite catalysis

A. T. Ahmed^{1,2}, A. I. Hillary^{2,3}, M. Variny¹ (¹Bratislava, ²Osara, ³Minna, Nigeria)

14:45–15:00

BIO-18 How can first generation biodiesel refinery survive year 2030?

M. Kuniř¹, I. Souček² (¹Kralupy nad Vltavou, ²Prague)

15:00–15:15

BIO-19 Bioeconomy as a structural carbon management instrument in transport and the chemical industry

M. Křemenák, I. Souček (Prague)

15:15–15:30

BIO-20 Industrial importance and synthesis of ϵ -Caprolactone

J. Afzaly, T. Molnár (Bratislava)

15:30–18:00 POLYMERS AND COMPOSITES

Chairperson: Z. Hrdlička (Prague)

15:30–15:45

PC-1 Investigation of natural rubber processing: Testing, evaluation, and comparative analysis

D. Čadek, A. Kuta (Prague)

15:45–16:00

PC-2 Hydrophilic sorbents based on natural polymers

M. Filipi, T. Weidlich (Pardubice)

16:00–16:15

PC-3 Isothermal thermogravimetric analysis as a method for determining the thermal stability of PVC.

A. Chodounská, R. Kalousková, J. Uřičář, Z. Hrdlička (Prague)

16:15–16:45 Coffee break

16:45–17:00

PC-4 New membranes for mix gas and flue gas separation

P. Stanovský, K. Friess, P. Izák (Prague)

17:00–17:15

PC-5 Biguanide ligand-supported Al/Mg/Zn catalysts for rapid and versatile ring-opening polymerization to biodegradable polyesters at ambient-conditions

L. Vlk, T. Chlupatý, A. Růžička (Pardubice)

17:15–17:30

PC-6 Molecularly imprinted polymers templated with structurally related terpenoids for selective separation

A. Šmídová, M. Kněžková, E. Vyskočilová, L. Dolejšová Sekerová (Prague)

17:30–17:45

PC-7 Degradation of cellulose fabrics

J. Uřičář, M. Kolářová, V. Benešová, R. Kalousková, J. Brožek (Prague)

17:45–18:00

PC-8

Printed invisible mark with upconversion visualizer – identification of archival documents and protection against theft

M. Veselý¹, M. Ďurovič² (¹Brno, ²Prague)

TUESDAY, APRIL 14, 2026

SAUVIGNON HALL

8:00–12:15

APPLIED CATALYSIS AND ORGANIC TECHNOLOGY

Chairpersons: M. Veselý, E. Vyskočilová (Prague)

8:00–8:30

COT-1 / KL Nanofibers in heterogeneous catalysis

T. Pokorný¹, Š. Kovář¹, L. Leonová¹, Z. Moravec¹, D. Škoda², R. Zhu³, Y. Román-Leshkov³, P. Rous⁴, L. Skuhrovcová⁴, A. Stýskalík¹ (¹Brno, ²Zlín, ³Massachusetts, USA, ⁴Litvínov)

8:30–8:45

COT-2

Rhodium supported on layered and exfoliated 2D materials as efficient catalysts for selective styrene hydroformylation

M. Pitínová, A. Shafiq, I. Danylo, M. Hlinková, L. Koláčný, M. Veselý (Prague)

8:45–9:00

COT-3

Hierarchically porous MOF-derived spherical carbon nanocomposites with cobalt nanoparticles for efficient CO₂ methanation

D. Škoda¹, P. Hongmanorom², B. Hanulíková¹, A. Dubravová¹, M. Cvek¹, I. Doroshenko³, T. Pokorný³, J. Varada³, L. Simoníková³, I. Kuritka¹, D. P. Debecker² (¹Zlín, ²Louvain-La-Neuve, Belgium, ³Brno)

9:00–9:15

COT-4

Mesoporous zeolite beta for production of low-emission fuels

J. Valenta¹, O. Bortnovský², V. Tokarová², J. Dědeček³ (¹Litvínov, ²Ústí nad Labem, ³Prague)

9:15–9:30

COT-5

Scalable mechanochemical production of Ni-Co sulfides for alkaline water splitting

T. Mudrinić¹, M. Baláž², M. Strečková² (¹Belgrade, Republic of Serbia, ²Košice)

9:30–10:00

COT-6 / KL

Maximizing refinery profitability through residue hydrocracking

J. Steegstra (The Hague, The Netherlands)

10:00–10:30

Coffee break

10:30–11:00

COT-7 / KL

Catalytic distillation: A new era for DME production

T. van Es (The Hague, The Netherlands)

11:00–11:15

COT-8

Quantitative double-tilt tomography and HR-TEM for the structural characterisation of photocatalysts Au/TiO₂ raspberry-colloid inverse opals

L. Koláčný¹, M. Bijl², A. Triptsis², A. Michalcová¹, J. E. S. van der Hoeven², M. Veselý¹ (¹Prague, ²Utrecht, The Netherlands)

11:15–11:30

COT-9

CO₂ cycloaddition to styrene oxide over MCM-41/CTAB

K. Oplová, E. Vyskočilová, E. Vrbková (Prague)

11:30–11:45

COT-10

synthesis of carvyl acetate by one-pot reaction

A. Rejzková, M. Plachý, E. Vyskočilová (Prague)

11:45–12:00

COT-11

Evaluation of non-traditional waste raw materials with advanced recycling technologies

P. Kuráň, M. Bačiak, J. Pátek (Ústí nad Labem)

12:00–12:15

COT-12

Glycerol valorization into higher value-added products: production of bio 1,2-propandiol

J. Vostrá, V. Vyskočil, J. Trejbal (Prague)

12:30–14:00

Lunch

14:00–18:00

CARBON NEUTRALITY

Chairpersons: I. Souček (Prague), T. Weidlich (Pardubice)

14:00–14:15

CN-1

Sustainability trends and the decarbonisation in the plastic industry supply chain

V. Kočí, T. Trecáková, K. Sirotná (Prague)

14:15–14:30

CN-2

Technical and engineering preparation of CCS and CCU pilot projects in the Czech Republic (2026–2027) Integrated approach to building a national Industrial Carbon Management system

T. Herink, P. Břenek, J. Suchý, L. Gál, I. Souček (Prague)

14:30–14:45

CN-3

Principles of geological carbon storage and its possible application in the Czech Republic

D. Štěpánský (Prague)

14:45–15:00

CN-4

Potential and pilot verification of CO₂ storage in geological structures of the Czech Republic

K. Bříza (Hodonín)

15:00–15:15

CN-5 Development of cross-border infrastructure for carbon dioxide transport in the Czech Republic

J. Mazač (Prague)

15:15–15:30

CN-6 Accurate description of thermodynamic properties and phase behavior of CO₂ Streams necessary for design of CCUS technologies

*V. Vinš¹, F. Fiedler², O. Bartoš¹, M. Čenský¹, A. Blahut¹, R. Span², J. Hrubý¹
(¹Prague, ²Bochum, Germany)*

15:30–15:45

CN-7 Interregional comparison of carbon capture, utilization, and storage (CCUS) for carbon neutrality: A case study of Indonesia and the Visegrád countries

M. Raynaldji^{1,2}, G. Harangozo¹, M. Variny² (¹Budapest, Hungary, ²Bratislava)

15:45–16:00

CN-8 CO₂ utilization for production of hydroxybenzoic acids

T. Weidlich¹, M. Jícha², L. Jurečka³ (¹Pardubice, ²Brno, ³Nová Ves)

16:00–16:15

CN-9 GreenChemForCE – circularity in the central european chemical sector as a pathway to carbon neutrality

L. Rýček (Prague)

16:15–16:45 Coffee break

16:45–17:00

CN-10 Artificial intelligence helps hydrocarbon technologies operate more efficiently and cleanly

M. Bajus (Bratislava)

17:00–17:15

CN-11 Intesification of carbon dioxide absorption from biogas in rotating packed beds

M. Jícha¹, O. Hájek¹, M. Malý¹, J. Elcner¹, P. Raptá¹, M. Blatkiewicz², M. Jaskulski², A. Górak², G. Brösigke³, J.-U. Repke³ (¹Brno, ²Łódź, Poland, ³Berlin, Germany)

17:15–17:30

CN-12 Carbon circularity in steam cracking: Opportunities and limits of plastic waste pyrolysis oil co-processing

M. Kaňková¹, P. Chládek², I. Souček¹, J. Doskočil², J. Trejbal¹ (¹Prague, ²Litvínov)

17:30–17:45

CN-13 Influence of alternative feedstock composition on carbonaceous deposit formation during hydrocarbon pyrolysis

P. Chládek¹, B. Baranova¹, O. Ottenschlager¹, M. Kankova², P. Michalicka², P. Vitiska², T. Herink², J. Doskočil¹ (¹Záluží, ²Prague)

17:45–18:00

CN-14 Power-to-liquid (PtL) technology overview

I. Souček, T. Hlinčík (Prague)



8:05–12:10

**DIGITAL AND GREEN TRANSFORMATION OF THE PLASTICS INDUSTRY
DIGITÁLNÍ A ZELENÁ TRANSFORMACE PLASTIKÁŘSKÉHO PRŮMYSLU***Chairperson: R. Pjatkan (Prague)*

8:05–8:30

Akční plán digitální a zelená transformace*R. Pjatkan (ČTPP)*

8:30–8:55

Metodologické výzvy v LCA recyklace plastů,*K. Sirotná, V. Kočí (VŠCHT, Praha)*

8:55–9:20

**Fabrication of biopolymer in cooperation of silver nanoparticles
act as a sustainable alternatives to replace single-use-plastics***U.Saleem¹, V. Koci¹, D. Hussain², M. Naseem² (¹Prague, ²Karachi, Pakistan)*

9:20–9:45

**Vybrané aspekty recyklace polymerních materiálů ve vztahu
k požadavkům cirkulární ekonomiky***J. Samsoněk (ITC)*

9:45–10:05

Kávová přestávka

10:05–10:30

**Projekt GreenChem4CE – cirkulární řešení použití plastů a plastových
odpadů***L. Rýček (UK)*

10:30–10:55

**Uhlíkové nanomateriály z pyrolýzy metanu jako funkční aditiva
pro pokročilé polymerní kompozity***J. Zich, T. Mates, S. Sharma, J. Volf, A. Prokhorov, A. Jiříčková, O. Jankovský,
M. Buryi (Praha)*

10:55–11:20

**Chemické změny termoplastů jako klíčový parametr pro opakovanou
recyklaci***L. Kubáč, O. Štrympl, K. Jindrová, P. Kuželka, D. Hausner, L. Martinková
(COC, VŠCHT Praha, Plastr, Inotex s.r.o.)*

11:20–11:45

Novinky v oblasti regulace a standardizace*P. Kulhánková (MPO)*

11:45-12:10

Přístup projektu ESURET k chemické recyklaci obtížně recyklovatelných odpadů

P. Kurář (UJEP)

Upozorňujeme, že na našich akcích pořizujeme záznamy a fotodokumentaci pro účely prezentace a archivace.

Sekce Digitální a zelená transformace plastikářského průmyslu je realizována v rámci projektu CZ.01.01.01/07/23_010/0001245 „Plasty V“, podporovaného v rámci OP TAK, programu Technologické platformy.

12:30-14:00 Lunch

14:00-16:15 INORGANIC TECHNOLOGY

Chairpersons: K. Bouzek (Prague)

14:00-14:30

IT-1 / KL Performance and degradation mechanisms of MoNiFeP modified carbon fibres under hydrogen evolution conditions in acidic and alkaline environment

M. Plevová, E. Mudrá, M. Strecková (Košice)

14:30-14:45

IT-2 Effect of pyrolysis temperature on hydrogen-evolution reaction capabilities of high-entropy carbides

K. Denk¹, M. Plevová¹, I. Shepa², K. Nemesh¹, D. Koziem², M. Strečková¹ (¹Košice, ²Krakow, Poland)

14:45-15:00

IT-3 Carbon nanotubes in new electrocatalytic systems for electrolytic hydrogen production

R. Košťúr, J. Záchenská, M. Zemanová (Bratislava)

15:00-15:15

IT-4 Enhancing Pt utilization via in-plane and through-plane gradients in PEMFC cathodes

M. Hala, R. Kodým, M. Prokop, K. Bouzek (Prague)

15:15-15:30

IT-5 Identification of potentially hazardous operating regimes in ammonia synthesis based on dynamic modelling

K. Valiyeva, L. Jelemenský (Bratislava)

15:30-15:45

IT-6 When adsorption is too fast: PCBs on commercial activated carbons

R. Števuľová, S. K. Vadlamudi, J. Híveš, L. Štibrányi (Bratislava)

15:45-16:00

IT-7 Electrochemical remediation of polychlorinated biphenyls: State of the art, gaps, and engineering pathways forward

S. K. Vadlamudi, R. Števuľová, J. Híveš (Bratislava)

16:00–16:15

IT-8 Thermal behavior and optical properties of rare-earth-element-doped aluminate glasses

L. Sedivá^{1,2}, B. Pecušová³, K. Faturiková², J. Valúchová², A. Prnová², P. Švančárek², D. Galusek² (¹Bratislava, ²Trenčín)

16:15–16:45 Coffee break

16:45–17:45 ENVIRONMENTAL PROTECTION TECHNOLOGY

Chairpersons: K. Kočí, L. Obalová (Ostrava)

16:45–17:00

EN-1 Heat transfer fluid recycling, practical experience

V. Henych, J. Skolil (Buštěhrad)

17:00–17:15

EN-2 Advanced methods for biogas purification

A. Kozusník¹, P. Wojnarova¹, P. Stanovsky^{1,2}, P. Lestinsky¹ (¹Ostrava, ²Prague)

17:15–17:30

EN-3 Determination of adsorbable organically bound fluorine in water samples according to norm ISO 18027

J. Soukup (Prague)

17:30–17:45

EN-4 Application of electro dialysis for N,N-dibutylimidazolium chloride recovery from wastewater – efficiency, membranes characteristics and chemical stability of the recovered ionic liquid

D. Babilas-Krzyżowska¹, A. Mielańczyk¹, K. Bartel¹, A. Milewski¹, J. Chromikova², S. Pluczyk-Matek¹ (¹Gliwice, Poland, ²Ostrava-Poruba)

15:00–18.00 POSTER SESSION

Chairperson: P. Krystyník, Ústí nad Labem

We ask the authors to be present at their posters at least from 15:00 to 16:30.
The best poster will be awarded in Aurelius Hall at 18:00.

LIST OF POSTERS

OIL, COAL, NATURAL GAS, ALTERNATIVE RAW MATERIALS

- P1-OP** **How to determine olefins in pyrolysis/HTL oils from waste plastics and tires using GC×GC-FID?**
M. Auersvald, M. Šíman, P. Straka (Prague)
- P2-OP** **Hydrocracking of pyrolysis oil from waste polyolefins**
V. Vyskočil¹, P. Straka¹, A. J. Abdulrahman², A. Zayoud^{2,3}, K. M. Van Geem², M. Auersvald^{1,2} (¹Prague, ²Ghent, Belgium, ³Pryme Clean Tech, Netherlands)
- P3-OP** **Analysis the condition of an ethane pyrolysis heater damaged during a power outage**
O. Ottenschläger, P. Michalička, P. Vitiska (Litvínov)
- P4-OP** **Characterization of waste LDPE and PP pyrolysis char**
J. Mikulec, M. Slezáčková, L. Danč, L. Pokorná, O. Špačeková (Bratislava)

SYNTHESIS AND PRODUCTION OF PHARMACEUTICALS

- P1-PT** **Synthesis of amphiphilic derivatives of dye-based heterocycles as potential antineoplastic agents**
D. Bortňák, A. Ondruška, V. Milata, D. Vegh, B. Pavílek (Bratislava)
- P2-PT** **From molecular design to bioimaging technology: π -extended EHDPP D–A–D systems with tunable photophysics**
K. Pauk¹, R. Musiol², A. Slodek², A. Imramovský¹ (¹Pardubice, ²Katowice, Poland)
- P3-PT** **Dynamic tablet disintegration as a tool for reverse engineering and design of generic drugs**
R. Ludas, P. Zámotný (Prague)
- P4-PT** **Methodological evaluation of API–excipient interactions through surface energy profiling**
D. Novák, R. Ludas, P. Stasiak, P. Zámotný (Prague)
- P5-PT** **Kynurenic acid amides in treatment for Alzheimer's disease**
B. Pavílek, D. Hajduová, V. Milata (Bratislava)

- P6-PT** **Studying the dissolution kinetics of high-melting drugs in doped polymer matrices using hot-stage microscopy**
L. Stoupová, T. Školáková, P. Zámotný (Prague)
- P7-PT** **Targeted removal of triflate salts after deprotection of tert-butoxycarbonyl protecting groups from the guanidine moiety**
M. Šanda, A. Imramovský (Pardubice)
- P8-PT** **Decoding compaction mechanics: Influence of powder rheology and kinematics on tablet and API integrity**
M. Švichký, J. Patera, J. Heřt, D. Spalovská (Prague)
- P9-PT** **Unexpected cleavage of N-N bonds of aldehyde pentafluorophenylhydrazones – New synthesis of nitriles and 2,3,5,6-tetrafluoroaniline and its addition product amidines**
D. Végh, V. Milata, D. Bortňák, B. Pavilek (Bratislava)

ECONOMICS OF THE CHEMICAL INDUSTRY

- P1-E** **Economic costs of reach/KKDIK compliance among SMEs in Türkiye: A reflexive thematic analysis**
R. Baştürk, S. Kumar Dey, P. Novak (Zlín)
- P2-E** **Global perspective of the social dimension of sustainability in supply chains: A bibliometric and content analysis**
K. Mencová, M. Gorčík, M. Znamínková (Pardubice)
- P3-E** **Financial performance and resilience of the Slovak chemical industry: Evidence from DuPont decomposition and bankruptcy prediction models**
I. Katrenčík, M. Kleinová, J. Kajanová (Bratislava)

MATERIALS AND PROCESS ENGINEERING

- P1-MPE** **Preparation and characterisation of Si₃N₄ capping layer**
P. Němec¹, M. Bouška¹, P. Janíček², J. Gutwirth¹, K. Bečvář (Pardubice)
- P2-MPE** **Investigation of degradation of tungsten-based materials for fusion devices using thermal load testing**
E. Fliegel Duchková¹, R. Petráš¹, M. Chocholoušek¹, L. Vála¹, M. Hajiček², J. Zýka², J. Matějček², M. Peterka² (¹Husinec-Řež, ²Prague)
- P3-MPE** **Rheological behaviour, stability, and mineralogical evolution of red gypsum and fluidized bed fly ash water grouts for sustainable geotechnical applications**
T. Jurásek, V. Bílek, J. Másilko, P. Sokola, T. Opravil (Brno)
- P4-MPE** **Applicability of the R3 test and the Chapelle test for determining the pozzolanic activity of overburden clays**
K. Králová, A. Ziganshina, M. Šídllová (Prague)
- P5-MPE** **Regeneration of cellulose from textile waste**
M. Předotová, P. Krystyník (Ústí nad Labem)

- P6-MPE** **Influence of surface degradation on the sorption properties of Mg–Ni powder materials**
T. Lovaši, J. Hruška, P. Lovašiová, A. Foitlová (Čelákovice)
- P7-MPE** **The effect of size and concentration of graphene nanoparticles on improvement of thermophysical properties of nanofluids**
E. Lyko Vachková, V. Pěnkavová, J. Tihon (Prague)
- P8-MPE** **Study of carbonation of the three-component hydraulic binder 3C as affected by different calcination methods**
L. Mauermann, M. Šídlová, K. Betáková, M. Kohoutková, K. Králová (Prague)
- P9-MPE** **Czech neutron association**
Michalcová A., Klicpera M. (Prague)
- P10-MPE** **Sheep wool as a soil amendment**
M. Pekař, V. Enev, M. Kalina, M. Klučáková, L. Kubíková, S. Mihočová (Brno)
- P11-MPE** **Characterisation and thermal plasma processing of tomato bio-polymer waste**
J. Pilař^{1,2}, A. Mašlániš, O. Jankovský¹, E. Meers², M. Buryš (Prague, ²Ghent, Belgium)
- P12-MPE** **Shape memory effect of atomized fractions of Ni-Ti-Cu-Zr-Hf alloy**
J. Pinc, H. Lesáková, M. Jarošová, E. Iaparova, O. Molnárová, J. Drahekoupil, L. Heller, A. Školáková (Prague)
- P13-MPE** **Corrosion behaviour of plasma-nitrided Y1860 S7 prestressing steel for bridge structures**
P. Pokorný, N. Prodanovic, V. Steinerová, A. Zabloužil, M. Jankovský, L. Mastný, M. Janata, V. Brožek (Prague)
- P14-MPE** **Reaction of calcium fluoride with Group 4 metals**
P. Pokorný, L. Mastný, M. Jankovský, Š. Msallamová, F. Lukáč, V. Brožek (Prague)
- P15-MPE** **Calcium fluoride coatings against hydrogen fluoride corrosion**
V. Brožek, J. Medřický, R. Mušálek, O. Živný, L. Mastný, P. Pokorný (Prague)
- P16-MPE** **Additive manufacturing of nitinol by directed energy deposition using powder and wire feedstocks**
P. Salvetr¹, M. Brázda¹, K. Kubášová², M. Daniel², M. Losertová³, V. Havlas², J. Džugan¹ (¹Dobřany, ²Prague, ³Ostrava)
- P17-MPE** **Complex concentrated alloys exhibiting high-temperature martensitic transformation**
A. Školáková, M. Janovská, E. Iaparova, O. Molnárová, J. Drahekoupil, H. Lesáková, L. Heller, J. Pinc (Prague)
- P18-MPE** **Approaching the optical bandgap limit: Donor-acceptor engineering and π -conjugation extension toward NIR fluorescence**
K. Teichmanová¹, K. Pauk¹, S. Luňák Jr.², K. Nagura³, A. Imramovský¹ (¹Pardubice, ²Brno, ³Tsukuba, Japan)

P19-MPE Central-shielding gas flow separation simulation in microwave plasma torches

J. Zich, T. Mates, D. Králík, T. Hostinský, J. Pilař, J. Fathi, M. Buryi (Prague)

BIOTECHNOLOGY AND BIOREFINERY

P1-BIO Complete utilisation of brewery by-products for the formulation of a functional dietary supplement

B. Branska, D. Doubková, K. Kaštánek, P. Patáková, K. Melzoch (Prague)

P2-BIO Optimisation of hydrolytic processing of brewer's spent grain for biotechnological applications

D. Doubková, E. Turynová, P. Kaštánek, B. Branská (Prague)

P3-BIO Synthesis of bio-epoxides by enzymatic and homogeneous catalysis

K. Dvořáková, L. Korecká, M. Hájek (Pardubice)

P4-BIO The trick is making it come back: Polymer degradability in soil and microbial production of PHB

P. Guziurova¹, V. Krempaska², P. Sedlacek³, S. Obruca¹ (¹Brno, ²Banská Bystrica)

P5-BIO Development of an antifungal agent effective against the pathogenic fungus Verticillium

T. Hasek¹, Z. Jandejsek², P. Patakova¹ (¹Prague, ²Trhový Štěpánov)

P6-BIO PHA synthase and its many relatives

K. Heřmánková, K. Sedlář (Brno)

P7-BIO Effect of food industry by-products on the growth dynamics of selected yeast genera

J. Holub, D. Špačková, N. Gerspitzerová, D. Hübsch, J. Obračaj, I. Márová (Brno)

P8-BIO Antibacterial effects of food-graded monascus pigments on clostridium butyricum

L. Jia, P. Patakova (Prague)

P9-BIO Functionalized crosslinked hyaluronic acid nanoparticles for cellular imaging and radioprotection

K. Kynclová¹, T. Jirků¹, K. Dvořáková¹, J. Tydlitát¹, J. Čížková², Z. Šinkorová², L. Korecká¹ (¹Pardubice, ²Hradec Králové)

P10-BIO Valorization of lignocellulosic waste for PHA production using the thermophile caldimonas thermodepolymerans

V.-A. Pacasova¹, X. Hajkova¹, A. M. Raketh², M. Constanti², S. Obruca¹ (¹Brno, ²Tarragona, Spain)

P11-BIO Hydrolysates from waste biomass as a high-quality organic fertilizer

M. Rousková¹, S. Šabata¹, R. Koprna², O. Šolcová¹ (¹Prague, ²Olomouc)

P12-BIO Click me if you can: Wild-type aneurinibacillus as surprising architects of functional PHA copolymers

V. Řeháková, I. Buchtíková, P. Sedláček, M. Kalina, K. Tušlová, S. Obruca (Brno)

- P13-BIO** **Using microbial extracts to create cosmetics products**
P. Šikorová, K. Reichertová, I. Márová (Brno)
- P14-BIO** **The path to sustainable nutrition: Isolating alternative proteins from residual biomass**
P. Sniegoňová¹, Y. Nagaraj², V. Passoth², I. Márová¹ (¹Brno, ²Uppsala, Sweden)
- P15-BIO** **Pushing the 3HV boundary: Engineering caldimonas thermodepolymerans for PHAs copolymers**
K. Šlosárová, X. Hájková, K. Šnejdrlová, A. Ieremenko, P. Dvořák, S. Obruča (Brno)
- P16-BIO** **Production and biological evaluation of yeast-derived extracellular polymeric substances**
D. Špačková, J. Holub, N. Gerspitzerová, J. Obručej, R. Mikulíková, I. Márová (Brno)

POLYMERS AND COMPOSITES

- P1-PC** **Recycled PTFE powder-based material for tribological applications**
A. Foitlová, M. Mészáros, Ž. Krčmářová, V. Steiner (Čelákovice)
- P2-PC** **Influence of NR/BR and SBR/BR blends formulation on the course of vulcanization and properties of the vulcanizates**
A. Kadeřábková, J. Zajíček (Prague)
- P3-PC** **3D-printed capsules: An innovative dosage form for fecal microbiota transplantation**
A. Pospíšilová¹, A. Komersová¹, M. Nevyhoštěná¹, J. Muselík², A. Franc², Z. Krepelková³, J. Novotný³ (¹Pardubice, ²Brno, ³Košice)
- P4-PC** **Dimethyl carbonate as processing solvent for explosives**
R. Skácel, M. Jančík, M. Karnet, M. Kalousek (Pardubice)

APPLIED CATALYSIS AND ORGANIC TECHNOLOGY

- P1-COT** **Advanced chemical deposition for atomically precise nanofabrication of platinum clusters on low-dimensional materials**
I. Danylo¹, M. Hlinková¹, J. Bachmann², M. Veselý¹ (¹Prague, ²Erlangen, Germany)
- P2-COT** **In Situ DRIFTS Study of CO adsorption over platinum and copper supported on 2D materials**
M. Hlinková, I. Danylo, M. Pitínová, M. Veselý (Prague)
- P3-COT** **A comparative evaluation of CO vs. CO₂ feedstocks for sustainable catalytic methanol synthesis**
M. Molínková, J. Čespiva, D. Kupka, J. Skřínský, M. Charvát (Ostrava)

- P4-COT** **3D printed tablets in the context of personalized medicine: New sulfonamides as potential drugs for Alzheimer's disease incorporated into delivery system via pharmaceutical 3D-printing**
M. Nevyhoštěná¹, A. Komersová¹, R. Svoboda¹, V. Pejchal¹, A. Pospíšilová¹, P. Koczurkiewicz-Adamczyk² (¹Pardubice, ²Kraków, Poland)
- P5-COT** **Transition Metal Dichalcogenides (TMDs) supported rhodium catalysts for enhanced hydroformylation activity and selectivity**
A. Shafiq, M. Hlinkova, M. Khover, Z. Zhuldyzai, M. Pitinova (Prague)
- P6-COT** **Catalytic activity distribution of individual catalyst particles in one catalyst batch**
S. Havrilová, L. Koláčny, I. Danylo, M. Hlinková, M. Veselý (Prague)
- P7-COT** **Preparation of non-symmetric ethers of 2-phenylethanol by direct dehydration**
Ž. Vrbová, E. Vrbková, E. Vyskočilová (Prague)

INORGANIC TECHNOLOGY

- P1-IT** **Preparation of early transition metal ions with low valency and open coordination sphere for catalytic application V(II)-ferrierite study**
J. Dedecek, M. Lemishka, D. Kaucky, I. Vasylenko, A. Shatan, I. Jirka (Prague)
- P2-IT** **Chemical disposal of salt slag from aluminum recycling**
M. Lhotka, L. Mastný, D. Kocúrek (Prague)
- P3-IT** **Linking viscosity and diffusion with crystal growth kinetics in Ge₂₅S₇₅ bulk glass**
D. Vaculík, J. Barták, P. Košťál, J. Málek (Pardubice)

ENVIRONMENTAL PROTECTION TECHNOLOGY

- P1-EN** **Water quality improvement via calcium carbonate recovery from borehole water in Zango area of Lokoja, Kogi state, Nigeria**
A. T. Ahmed^{1,2}, T. A. Comfort², M. Variny¹, I. A. Joseph², V. J. Ugbedeajo², B. O. Omotola² (¹Bratislava, ²Kogi State, Nigeria)
- P2-EN** **Hydroxylation as the very first step during heterogeneous photocatalysis of azo dyes**
J. Kořínková, K. Nováková, A. Imramovský, O. Machalický, J. Badura (Pardubice)
- P3-EN** **Validation of catalytic biogas and off-gas methanation: Pilot testing under real conditions at a wastewater treatment plant**
J. Kulas, N. Streltsov, A. Doucek (Husinec-Řež)
- P4-EN** **Are pyrolysis chars really safe for environmental applications? An ecotoxicological perspective**
H. Burdová¹, D. Polanská Nebeská¹, Z. Kwoczynski^{1,2}, L. Žižková¹, V. Neubertová¹, J. Snow^{1,2}, D. Pilnaj^{1,2}, M. Baka^{1,2}, K. Al Soukri² (¹Ústí and Labem, ²Prague)

- P5-EN** **Ozonation and ion pairing as methods for purification of model waters containing azo dyes**
P. Leinweber¹, M. Trudičová^{1,2}, J. Malý¹, T. Weidlich¹ (¹Pardubice, ²Brno)
- P6-EN** **Electrochemical compression – Advanced hydrogen compression technology**
N. Streltsov, J. Kulas, A. Doucek (Husinec-Řež)
- P7-EN** **Use of the synergistic effect of sorption and photocatalytic oxidation for the removal of micropollutants from water**
P. Lacina¹, J. Lev¹, V. Chrástný², J. Filip³, V. Veselská³, L. Trakal² (¹Brno, ²Prague, ³Olomouc)