

12:45–17:00 PLENARY SESSION

Chairs: Lederer J., Lubojacký J.

12:45–13:00 Opening

*Assoc Prof. Ing. Jaromír Lederer, Ph.D., CSIC President
Ing. Jaromír Lubojacký, MBA, President of the Program Committee*

13:00–13:15 Viktor Ettel Award

Assoc Prof. Ing. Jaromír Lederer, Ph.D., CSIC President

13:15–13:30

1. Water: an ecological and acidic solvent for catalytic processes

Prof. Ing. Milan Hronec, DrSc., STU Bratislava (laureate of the Viktor Ettel Prize)

13:30–13:55

2. Development and implementation of dicyclopentadiene production in Litvínov

Prof. Ing. Tomáš Herink, Ph.D., ORLEN Unipetrol

13:55–14:20

3. Chemical industry transition pathway – new EU framework, Czech adaptation

Ing. Ivan Souček, Ph.D., Association of the Chemical Industry of the Czech Republic

14:20–14:45

4. News in EGD from the MIT perspective

Ing. Pavlína Kulhánková, Ministry of Industry and Trade of the Czech Republic

14:45–15:20 Coffee break

15:20–15:45

5. Decarbonisation of the chemical and steel industry from a process engineer's perspective

Prof. Ing. Kamil Wichterle, Ph.D., VŠB TU Ostrava

15:45–16:10

6. Strategic research agenda of CTP SusChem

Ing. Ladislav Novák, Ph.D., Ing. Martin Šilhan, Ph.D., MBA, Czech Technology Platform for Sustainable Chemistry

16:10–16:35

7. Sun and nanomaterials for CO₂, H₂O, N₂ utilization

Prof. Ing. Václav Švorčík, DrSc., UCT in Prague

16:35–17:00

8. Polyhydroxyalkanoates – renewable bacterial polymers with multiple biological functions and potential applications

Prof. Ing. Stanislav Obruča, Ph.D., Faculty of Chemistry, Brno University of Technology

8:05–18:10 MATERIALS ENGINEERING*Chair: Novák P., Prague*

8:05–8:30

MI-1 Microstructure of aluminum single crystal after complex severe plastic deformationMolnárová O., Školáková A., Habr S., Čapek J., Málek P., Lejček P., Prague

8:30–8:55

MI-2 Non-conventional applications of intermetallicsNovák P.¹, Skotnicová K.², Szurman I.², Borkovcová K.¹, Růžička J.¹,
Tsepeleva A.¹, Michalcová A.¹, Průša F.¹, ¹Prague, ²Ostrava-Poruba

8:55–9:20

MI-3 The influence of alloying elements distribution on degradation behaviour of tin-rich materialsMichalcová A.¹, Msallamová Š.¹, Friák M.², ¹Prague, ²Brno

9:20–9:45

MI-4 Easily tunable properties of high-entropy Cantor alloy by changing its composition

Průša F., Kratochvíl P., Thürllová H., Strakošová A., Karlík M., Čech J., Prague

9:45–10:10

MI-5 Microstructure and properties of the refractory high-entropy alloys

Thürllová H., Průša F., Sovadina M., Kratochvíl P., Ekrt O., Prague

10:10–10:30 Coffee break

10:30–10:55

MI-6 Influence of Mn and Al on advanced high-entropy alloys prepared by mechanical alloying

Kratochvíl P., Thürllová H., Průša F., Prague

10:55–11:20

MI-7 Micro and nanostructuring of amorphous chalcogenide thin films

Vlcek M., Palka K., Slang S., Jancalek J., Kurka M., Jemelka J., Pardubice

11:20–11:45

MI-8 Comprehensive characterization of carbon materials as possible catalytic supports using XRD, HR-TEM, SEM, N₂ adsorption and XPS analysis in relation to their thermal stability in airSádovská G.^{1,2}, Honcová P.², Morávková J.¹, Jirká I.¹, Vorokhta M.¹, Pilář R.¹, Rathouský J.¹, Kaucký D.¹, Mikysková E.¹, Sazama P.¹, ¹Prague, ²Pardubice

11:45–12:10

MI-9 Investigation of the structure of tin alloys in historical organ pipes by transmission electron microscopy

Kačenka Z., Michalcová A., Msallamová Š., Prague

8:05–18:10 MATERIALS ENGINEERING*Chair: Novák P., Prague***12:10–13:40 Lunch**

13:40–14:05

- MI-10 Economically available magnesium alloys with high resistance to ignition**
Hosová K., Kubásek J., Vojtěch D., Prague

14:05–14:30

- MI-11 Zinc materials prepared by powder metallurgy**
Nečas D., Boukalová A., Pokorný J., Dvorský D., Kubásek J., Prague

14:30–14:55

- MI-12 Hydrogen embrittlement of 3D printed high strength 1.2709 steel**
Strakosova A., Roudnická M., Ekrt O., Vojtěch D., Michalcová A., Prague

14:55–15:20

- MI-13 Technology of DED as new repair process of high pressure die casting**
Borkovcova K.^{1,2}, Novák P.¹, Zajíč J.², ¹Prague, ²Mladá Boleslav

15:20–15:40 Coffee break

15:40–16:05

- MI-14 3D printed Ti-Ni alloys prepared by selective laser melting for solid-state cooling technologies**
Straková M.^{1,2}, Pilch J.¹, O'Toole K.¹, Brabazon D.¹, Kubásek J.², Vojtěch D.², ¹Dublin (Ireland), ²Prague

16:05–16:30

- MI-15 Vintage Harley-Davidson motorcycle valve steel structure study**
Růžička J.^{1,2}, Novák P.¹, Vogt J.-B.², Bouquerel J.², ¹Prague, ²Lille (France)

16:30–16:55

- MI-16 Reduced deep-sea nodules as an additive for aluminum alloys**
Tsepeleva A., Novák P., Vlášek J., Simoniakin A., Prague

16:55–17:20

- MI-17 Resistometric method for corrosion monitoring**
Reiser M., Haviř Š.S., Kouřil M., Prague

17:20–17:45

- MI-18 Surface treated titanium alloy for proton exchange membrane fuel cells bipolar plates**
Ludvík J., Hala M., Kouřil M., Fojt J., Prague

17:45–18:10

- MI-19 Preparation of titanium aluminides-based coatings using powder metallurgy**
Teichmanová A., Michalcová A., Balejová V., Prague

8:05–15:20 BIOTECHNOLOGY AND BIOREFINERY*Chairs: Patáková P., Branská B., Prague*

8:05–8:30

- BI-1 The annotation and functional description of non-model bacteria for bio-based engineering and industry**
Sedlář K., Munich (Germany)

8:30–8:55

- BI-2 Genus Aneurinibacillus – a unique bacterium among thermophilic polyhydroxyalkanoate producers**
Pernicová I., Kouřilová X., Řeháková V., Dyagilev D., Marková L., Sedlář K., Musilová J., Sedláček P., Obruča S., Brno

8:55–9:20

- BI-3 Usefullness of thermophilic bacteria as biopolymer producers**
Kouřilová X., Pernicová I., Musilová J., Sedlář K., Obruča S., Brno

9:20–9:45

- BI-4 Robolector XL® – future of optimization and automatization of microfermentative processes for accelerated scale-up and streamlined research applications**
Kašparová P., Šebo P., Prague

9:45–10:10

- BI-5 Characterization of probiotic bacterium clostridium butyricum**
Basařová D., Kaštánek P., Patáková P., Prague

10:10–10:30 Coffee break

10:30–10:55

- BI-6 Innovative approaches for reusing animal by-products**
Stiborová H., Kaštánek P., Száková J., Branská B., Patáková P., Kliková K., Demnerová K., Prague

10:55–11:20

- BI-7 The potential of monascus spp extracts as photosensitizers in antimicrobial photodynamic therapy**
Husáková M.¹, Orlandi V.², Patáková P.¹, ¹Prague, ²Varese (Italy)

11:20–11:45

- BI-8 Evaluation of packaging materials for biofilters: prediction and verification of biofilm developement**
Mach J.¹, Halecký M.¹, Pohořelý M.¹, Zápotocký L.², ¹Prague, ²Stehelčeves

11:45–12:10

- BI-9 Silver nanoparticles synthesized using viticultural waste – characterization and antimicrobial activity**
Miškovská A., Matátková O., Čejková A., Prague

8:05–15:20 BIOTECHNOLOGY AND BIOREFINERY*Chairs: Patáková P., Branská B., Prague***12:10–13:40 Lunch**

13:40–14:05

BI-10 Antimicrobial activity of lignin-based nanosystems*Maršík D.¹, Thoresen P.P.², Masák J.¹, Rova U.², Christakopoulos P.², Matsakas L.²**¹Prague, ²Luleå (Sweden)*

14:05–14:30

BI-11 Non-thermal plasma as a tool for fungal biofilms elimination*Kulišová M., Jarošová I., Prague*

14:30–14:55

BI-12 Thermal radon springs as a source of extremophilic microorganisms*Timkina E., Jarošová I., Matátková O., Prague*

14:55–15:20

BI-13 Epoxidation of esters from vegetable oils – reaction conditions and statistical evaluation*Hájek M., Kocián D., Douda M., Pardubice***15:20–15:40 Coffee break**

15:40–16:55 SYNTHESIS AND PRODUCTION OF DRUGS

Chair: Kratochvíl B., Prague

15:40–16:05

- SP-1 Antibody-drug conjugates, the combination of large and small therapeutic molecules in oncology. Electron diffraction**

Kratochvíl B., Benešová E., Prague

16:05–16:30

- SP-2 Roll compaction process development and transfer aided by compaction analyzer**

Petr J., Stasiak P., Marinko N., Krpelan T., Zámostný P., Prague

16:30–16:55

- SP-3 Rheological properties of pharmaceutical mixtures for orally disintegrating tablets and their effect on final tablet properties**

Macho O., Pastorová N., Guštafík A., Gabrišová L., Bratislava

8:05–10:55 DECARBONISATION AND THE ECONOMICAL ASPECTS OF THE CHEMICAL INDUSTRY TRANSFORMATION*Chair: Souček I., Prague*

8:05–8:20

D-1 Is green hydrogen competitive?*Hamza B., Souček I., Prague*

8:20–8:30

D-2 CCU solutions vs. additional energy requirements*Šot O., Souček I., Prague*

8:30–8:55

D-3 Optimizing steam power in industry – decarbonization opportunity*Variny M., Janošovský J., Červeňanský J., Furda P., Čerňanská B., Hucík M., Kállay D., Bratislava*

8:55–9:20

D-4 Decarbonisation processes from the perspective of CO₂ capture and utilisation*Gal L., Prague*

9:20–9:45

D-5 Better safe than sorry – are we rushing hydrogen?*Janošovský J., Kravíarová D., Detko J.S., Variny M., Bratislava*

9:45–10:10

D-6 The logistics in the chemical industry*Košálek J., Koťátková Stránská P., Prague***10:10–10:30 Coffee break**

10:30–10:55

D-7 Possibilities of implementation of circular economy principles in SMEs of the chemical industry in the Czech Republic*Benda A., Munzarová S., Pardubice*

10:55–14:55 ECONOMICS OF THE CHEMICAL INDUSTRY*Chair: Vávra J., Pardubice*

10:55–11:20

- E-1 Evaluation of the benefits of the implementation of CSR concept in enterprises**

Vlčková V., Horáková M., Pardubice

11:20–11:45

- E-2 Ways to improve the collection and recycling of separate waste in the selected region – case study**

Branská L., Paták M., Dostálková A., Pecinová Z., Pardubice

11:45–12:10

- E-3 Indicators of sustainable production in chemical enterprises**

Vávra J., Vrbická T., Pardubice

12:10–13:40 Lunch

13:40–14:05

- E-4 Sustainable human resources management**

Botek M., Charvátová D., Prague

14:05–14:30

- E-5 Online reputation management in companies of the chemical industry in the Czech Republic**

Poppelová E., Jelinková M., Hradec Králové

14:30–14:55

- E-6 Circular economy in enterprises of the Czech chemical industry**

Kutnohorská O., Strachotová D., Prague

15:20–15:40 Coffee break

15:40–18:10 CHEMICAL PROCESSES AND DEVICES*Chair: Jirout T., Prague*

15:40–16:05

CP-1 LRI ENREGAT... from fundamental to applied research... continues in 2023–2026

Grycová B., Obalová L., Ostrava-Poruba

16:05–16:30

CP-2 New technologies of infrared spectrometers dedicated for process monitoring

Matoušek D., Novotný M., Brno

16:30–16:55

CP-3 Experiential education in process engineeringBělohlav V.¹, Herink T.², Jirout T.¹, Bělohlav Z.¹, ¹Prague, ²Litvínov

16:55–17:20

CP-4 Flue gas condenser of biomass-fired heating plant

Hlaváček O., Lodňánek P., Prague

17:20–17:45

CP-5 Mettler-Toledo sets up new technology levels to chrystallization studies

Leppänen K.K., Schwerzenbach (Switzerland)

17:45–18:10

CP-6 Exploring novel connections between Raman spectroscopy, microwave reactors, and rheometers

Rapta M., Anton Paar Czech Republic

8:30–12:10 ZELENÁ DOHODA RECYKLACE PLASTŮ*Chair: Reiss J., Prague*

8:30–8:55

Zelená a digitální transformace z pohledu ČTP Plasty
Reiss J., ČTP Plasty

8:55–9:20

Chemická recyklace plastů
Souček I., Reiss J., SCHP ČR

9:20–9:45

Evropská regulace a recyklace plastů
Kulhánková P., MPO

9:45–10:10

Chemická recyklace: cesta k vyšší míře materiálového využití odpadních plastů
*Snow J., Brabliková M., ORLEN UniCRE
Suchopa R., ORLEN Unipetrol***10:10–10:30 Coffee break**

10:30–10:55

Využití produktů termochemické recyklace v chemickém průmyslu
Bačiak M., ENRESS

10:55–11:20

Využití odpadních plastů
Hausner D., Plastikářský klastr

11:20–11:45

OPTIMUS – efektivní recyklace plastů
Wipplinger E., Plastoil

11:45–12:10

Chemická recyklace textilu na bázi polyesterových vláken a bavlny
*Kurání P., Oravová L., Midula P., Krystyník P., Adamec S., Bůžek D., UJEP***12:10–13:40 Lunch**

13:40–17:45 POLYMERS, COMPOSITES*Chair: Kuta A., Prague*

13:40–14:05

- PC–1 The influence of zinc oxide and zinc stearate on vulcanization**
Čadek D., Manligová E., Kuta A., Prague

14:05–14:30

- PC–2 Production and application of ground tyre rubber: a way to increase the circularity of rubber materials**
Hrdlička Z.¹, Brejcha J.^{1,2}, ¹Prague, ²Ústí nad Labem

14:30–14:55

- PC–3 Enhancing properties of thermoplastic material: investigating natural rubber/thermoplastic starch composites using multiple techniques**
Cai Z., Čadek D., Kuta A., Kadeřábková A., Jindrová M., Prague

14:55–15:20

- PC–4 Polyolefin structure modification: from basic materials to polymer specialities**
Kotyza O., Sokolohorský A., Merna J., Prague

15:40–16:05

- PC–5 Processing of PTFE-PEEK polymer blend in air atmosphere and its final properties**
Melichar J., Foitlová A., Mészáros M., Steiner V., Čelákovice

16:05–16:30

- PC–6 Chiral composite membrane for enantiomer separation**
Izak P.¹, Yalcinkaya F.², Kohout M.¹, ¹Prague, ²Liberec

16:30–16:55

- PC–7 CO₂ separation using polyimide-based membranes**
Iablochkin K., Melzerová J., Fila V., Bernauer M., Prague

16:55–17:20

- PC–8 Volatile organic compounds released from PVC wire coating**
Uřičář J., Pilnaj D., Kalousková R., Veselý P., Brožek J., Prague

17:20–17:45

- PC–9 Surface and biological properties of polyetheretherketone with silver-doped domains as advanced biomaterial**
Pryjmaková J.¹, Vokatá B.¹, Slouf M.¹, Hubáček T.², Siegel J.¹, ¹Prague, ²České Budějovice

8:05–12:10 INORGANIC TECHNOLOGY*Chair: Lhotka M., Fila V., Prague*

8:05–8:30

IT-1 Analysis of selected properties of hydroxyapatite powder for the production of granulate used for filament for 3D printing*Peciar P., Jezsó K., Guštafič A., Úradníček J., Veteška P., Bača L., Thurzo A., Janek M., Bratislava*

8:30–8:55

IT-2 Mineral fertilizer with natural anhydrite – connection of laboratory and production practice*Štefancová R., Herencsárová G., Kučera M., Bratislava*

8:55–9:20

IT-3 The stability monitoring of solid ferrates(VI)*Benkőová M., Mališová E., Híveš J., Bratislava*

9:20–9:45

IT-4 Intrinsic nature and active surface sites affecting the effectivity of Ni-Fe-W catalyst*Záhenská J., Mičiaková J., Lokaj J., Zemanová M., Bratislava*

9:45–10:10

IT-5 Effect of the membrane and catalyst binder on the performance of membrane-electrode assembly in alkaline water electrolysis*Plevová M., Hnát J., Žitka J., Bouzek K., Prague*

10:10–10:35

IT-6 2D and 3D mathematical model of the alkaline fuel cell stack – design optimization and parasitic current analysis*Zejmon M., Kodým R., Paidar M., Bouzek K., Prague***10:10–10:30 Coffee break**

10:55–11:20

IT-7 Alkaline water electrolysis for energy conversion – impact of the separator type on the cell operational conditions*Denk K., Kodým R., Hnát J., Paidar M., Bouzek K., Prague*

11:20–11:45

IT-8 Modelling hydrogen production from renewable sources of energy using alkaline water electrolysis*Denk K., Paidar M., Hnát J., Bouzek K., Prague*

11:45–12:10

IT-9 3D printed flow cell for the electrochemical determination of antibiotics*Dakošová O.¹, Kolivoška V.², Gál M.¹, ¹Bratislava, ²Prague*

8:05–10:35 ORGANIC TECHNOLOGY*Chair: Zámostný P., Prague*

8:05–8:30

OT-1 Study of the properties of the cobalt catalyst used for the hydrogenation of aniline to cyclohexylamine

Valeš R., Krupka J., Dvořák B., Prague

8:30–8:55

OT-2 Preparation of esters of tertiary alcohols

Kotova M., Šnebergerová A., Vargina T., Prague

8:55–9:20

OT-3 New anti-corrosion colorants

Hrdina R., Kalendová A., Burgert L., Krejčová A., Fouzy A., Michaličková L., Kohl M., Bouška M., Raycha Y., Pardubice

9:20–9:45

OT-4 Organic electrolytes for flow batteriesKubáč L.¹, Akrman J.¹, Černý J.¹, Mazúr P.², ¹Rybitví, ²Prague

9:45–10:10

OT-5 Production of 4-Amino-4H-1,2,4-triazole and its application as the nitrification inhibitor

Kelemen P., Majerníková J., Tokár Z., Kučera M., Bratislava

10:10–10:35

OT-6 Heterogeneous catalysis of ethanol transformation by Li-Al mixed oxides doped by transition metal

Malina J., Hájek M., Frolich K., Pardubice

10:10–10:30 Coffee break

8:05–12:10 OIL, PETROCHEMICALS, BIOFUELS*Chair: Kittel H., Prague*

8:05–8:30

- OP-1 Key trends and strategies in the oil and petrochemical industry**
Kittel H., Prague

8:30–8:55

- OP-2 Development of fuel and biofuel technologies at PKN ORLEN: Co-BIO and GASSTO projects**
Majoch A., Warszawa (Poland)

8:55–9:20

- OP-3 Zero emission refinery: reality or dream?**
Souček I., Kittel H., Minařík Z., Prague

9:20–9:45

- OP-4 Potential for use of side streams in the production of dicyclopentadiene**
*Waňousová S.¹, Herink T.¹, Perrot A.², Hyršl J.², Bandžuch J.², Černý R.¹, Kunrtová D.¹
¹Litvínov, ²Pardubice*

9:45–10:10

- OP-5 High temperature removal of halogenated compounds from pyrolysis of waste plastic on solid sorbents**
Šrámek V., Skoblia S., Pohořelý M., Prague

10:10–10:30 Coffee break

10:10–10:35

- OP-6 Coffee waste as a source of oil for biodiesel preparation by heterogeneous transesterification over La-Ni/MgAl mixed oxides**
Mališová M., Horňáček M., Peller A., Bratislava

10:55–11:20

- OP-7 Effect of carbon chain length and shape of hydrocarbons molecules on catalytic cracking and aromatization over HZSM-5 catalysts during catalytic pyrolysis of polyolefins**
*Lestinský P.¹, Klemencová K.¹, Grycová B.¹, Inayat A.², Schwieger W.², Inayat A.¹
¹Ostrava, ²Erlangen Nuremberg (Germany)*

11:20–11:45

- OP-8 Sludge formation during long-term storage of various types of crude oil**
Lyko Vachková E., Váchová V., Maxa D., Straka P., Prague

11:45–12:10

- OP-9 Potential of mixed oxides in valorization of ethanol to higher add value chemicals**
Kocík J.¹, Mück J.², Tišler Z.¹, ¹Litvínov, ²Pardubice

8:05–11:20 CIRCULATING ECONOMY*Chair: Weidlich T., Pardubice*

8:05–8:30

CE-1 Treatment of wastewater contaminated with halogenated aromatic chemicals, the circular economy approachWeidlich T.¹, Borovská L.¹, Kamenická B.¹, Malý J.¹, Maňášková K.¹, Hegedüs M.²¹Pardubice, ²Blansko

8:30–8:55

CE-2 Zinc ash waste transformation to fertilizers – suitable form for plants

Foltinovič T., Štefancová R., Kučera M., Bratislava

8:55–9:20

CE-3 The waste recycling

Koštálek J., Vlachý J., Prague

9:20–9:45

CE-4 Removal of chlorine during pyrolysis of plastic waste

Snow J., Lederer J., Kuráň P., Ústí nad Labem

9:45–10:10

CE-5 A process for recycling mixed textiles containing pes by solvent extraction of polymers

Skuhrovcová L., Lederer J., Ústí nad Labem

10:10–10:30

CE-6 Chemical recycling of a mixture of waste LDPE and PP into an aviation fuel component

Ondrovič T., Mikulec J., Peller A., Hájeková E., Bratislava

10:55–11:20

CE-7 Chemical recycling of waste polyolefins via thermo-catalytic pyrolysis over HZSM-5 zeolites: a description for different feedstocks and reactor configurationsInayat A.¹, Klemencová K.¹, Inayat A.², Schwieger W.², Lestinsky P.¹¹Ostrava, ²Erlangen Nuremberg (Germany)