

CONGRESS COMMITTEES

Board of the Congress

J. Drahoš (Congress Chair, President of the Czech Society of Chemical Engineering)
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D. Dorland (Past President of the American Institute of Chemical Engineers–AIChE)
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V. Báleš (President of the Slovak Society of Chemical Engineering–SSChE)
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SCIENTIFIC COMMITTEES

General topics

Reaction engineering, catalysis, and kinetics

B. Delmon (BE), G. Eigenberger (DE), S. Fogler (US), J. Hanika (CZ), J. Kosek (CZ), F. Pla (FR), P. Rudolf von Rohr (CH), P. L. Silveston (CA), V. Tukač (CZ)

Separation processes and equipment

H. J. Bart (DE), M. Bleha (CZ), L. Boyadzhiev (BG), G. Casamatta (FR), R. C. Darton (UK), E. Drioli (IT), W. Hoflinger (AT), V. Jiříčný (CZ), N. N. Kulov (RU), P. Mikulášek (CZ), R. Pohorecki (PL), J. Procházka (CZ), J. Přidal (CZ), S. Schlosser (SK), V. Staněk (CZ)

Phase equilibrium and fluid properties

K. Aim (CZ), G. Maurer (DE), E. H. Stenby (DK), A. Toikka (RU), P. Ungerer (FR), I. Wichterle (CZ)

Fluid flow and multiphase systems

H. E. A. van den Akker (NL), H. Arastopour (US), N. Brauner (IL), P. Dittl (CZ), Du Sichen (SE), L. S. Fan (US), I. Fořt (CZ), F. Magelli (IT), F. Muzzio (US), A. W. Nienow (UK), M. Růžička (CZ), K. Svoboda (CZ), K. Wichterle (CZ), G. Wild (FR), R. Zevenhoven (FI)

Computer aided process engineering

D. Bogle (UK), E. Eckert (CZ), R. Gani (DK), M. Kubíček (CZ), W. Marquardt (DE), D. Šnita (CZ), G. A. Statyukha (UA)

Chemical engineering education

V. Machoň (CZ), M. Molzahn (DE), P. G. Warfvinge (SE)

Heat transfer processes and equipment

B. Čermák (CZ), Z. Jegla (CZ), L. Liebenberg (ZA), V. Wadekar (UK)

Particulate solids

T. A. Bell (US), J. Dodds (FR), T. Dyakowski (UK), G. G. Enstad (NO), E. Forsberg (SE), H. Kalman (IL), P. Massacci (IT), A. Roberts (AU), F. Saito (JP), N. Številová (SK), J. Stražičar (SI), T. Svěrák (CZ), J. Tomas (DE), W. Valderrama R. (CL), S. Verdes (HU)

PRES 2004

Chairmen: J. Klemeš (UK), P. Stehlík (CZ)

Vice-chairmen: F. Friedler (HU), S. Pierucci (IT)

Members: H. Cabezas (US), U. Diwekar (US), V. Dovi (IT), A. Espuna (ES), M. C. Georgiadis (GR), A. J. Ghajar (US), A. Gorak (DE), T. Gundersen (NO), G. Gruhn (DE), C. W. Hui (HK-CN), D. Huisingh (US), J. Jelínek (CZ), P. Kapustenko (UA), A. Kraslawski (FI), T. Kudra (CA), D. Kukulka (US), T. Majozí (ZA), F. Marechal (CH), J. Meyer (ZA), M. Narodoslowsky (AT), E. Pistikopoulos (UK), V. Plesu (RO), L. Puigjaner (ES), E. Ranzi (IT), D. Reay (US), R. Sabadi Diaz (CU), R. Smith (UK), M. Sorin (CA), P. Stuart (CA), B. Thonon (FR), K. Urbaniec (PL), G. Vaccari (IT), E. Worrell (US), G. Wozny (DE), T. Zhelev (IE)

Specialised symposia

Symposium on environmental engineering

E. Dinjus (DE), I. Holoubek (CZ), J. Horák (CZ), M. Punčochář (CZ), F. Santarelli (IT), J. Venselaar (NL)

Symposium on safety in chemical industry

F. Babinec (CZ), S. Berger (US), M. Considine (UK), O. Fredholm (SE), L. Ivánek (CZ), H. J. Pasman (NL), J. L. Py (FR), H. G. Schecker (DE), P. J. Schmelzer (DE), D. Skarba (SK), J. Škarka (CZ), G. Suter (CH), R. D. Turney (UK)

Symposium on multi-scale aspects of bubbly flows

A. Biesheuvel (NL), A. Cartellier (FR), G. Evans (AU), M. Lance (FR), J. Magnaudet (FR), R. Manasseh (AU), D. Mewes (DE), A. Prosperetti (US), M. Růžička (CZ), A. Serizawa (JP), M. Sommerfeld (DE), S. Sundaresan (US), I. Zun (SI)

Symposium on electrochemical engineering

K. Bouzek (CZ), C. Comninellis (CH), N. V. Fateev (RU), L. J. J. Janssen (NL), K. Jüttner (DE), F. Lapicque (FR), T. Lehmann (DE), A. A. Wragg (UK)

Symposium on micro- and mesoporous materials

B. Bernauer (CZ), J. A. Dalmon (FR), G. Emig (DE), P. Hudec (SK), M. Kočířik (CZ), G. M. Rios (FR), O. Šolcová (CZ)

Symposium on supercritical fluids

R. Eggers (DE), Z. Knez (SI), H. Sovová (CZ)

Symposium on food processing and technology and product engineering

Z. Bubník (CZ), M. Houška (CZ), J. Iciek (PL), P. Kadlec (CZ), B. McKenna (IE), P. Nesvadba (UK), M. Saska (US)

Symposium on odour control and measurement

P. Auterská (CZ), T. van Harreveld (NL), D. Mannebeck (DE), M. Mlejnek (CZ), J. Skácelová (CZ)

Symposium on progress in chemical technology and on product engineering

B. Bernauer (CZ), J. Mikulec (SK), J. Páca (CZ), J. Pašek (CZ), H. P. Schmauder (DE), J. Škarka (CZ), C. R. Soccol (BR)

Symposium on microreaction technology for process development and production

J. P. Baselt (DE), K. J. Caspary (DE), W. Ehrfeld (DE), M. Marek (CZ), M. Matlosz (FR), L. Plass (DE), A. Renken (CH), R. Schütte (DE)

WELCOME

Welcome to the 16th International Congress of Chemical and Process Engineering CHISA 2004 to be held in Prague on 22–26 August 2004.

CHISA Congress history

The series of International Congresses CHISA has started in 1962 in Brno, then continued in Mariánské Lázně, and since 1972 the Congresses are being held in Prague - in the heart of Europe. However, it is worth mentioning that the name was used as a logo for the national event as early as 1956.

The word CHISA originates from the Czech acronym for "Chemical Engineering, Chemical Equipment Design and Automation" and has become later a "trade mark" for large meetings traditionally devoted to the entire area of chemical and process engineering topics, covering science, research, development and industrial production.

From the very beginning, the CHISA Congresses have emphasised especially the East-West-European and later the pan-European contacts. Nevertheless, the stepwise development during the last decade testifies about much larger broadening of geographical horizons. This is evidenced by permanent increase of participation from both the American continents, or from Near East and Asian-Pacific regions. All these facts are transforming the one-time Congresses into an event of world importance that is interesting not only for chemical and process engineers.

By 1 August 2004, more than 1100 participants from nearly 70 countries have been registered to deliver 1500 contributions, approximately.

GENERAL INFORMATION

Congress venue and language

The Congress will take place in the premises of the Czech Technical University, Faculty of Civil Engineering (in Czech: ČVUT–Fakulta stavební), Thákurova St. 7, Praha 6-Dejvice (en route from airport to the city centre; Metro station: Dejvická, line A).

The Congress language is English. No simultaneous translation will be provided.

Congress Office and registration

The Congress Office will be open for registration on arrival, accommodation and information at the Congress site on Saturday, 21 August at 14–20 h. and on Sunday, 22 August at 10–19 h. The Office is operating from Monday till Thursday at 8–17 h.

Congress opening

The Congress will officially begin with the Festive Congress opening on Sunday, 22 August at 20–22 h. in the Municipal House of Prague (“Obecní dům”, Metro line B, station Náměstí republiky).

Addresses and contacts

Organising Committee

Post mail and Express Courier: CHISA 2004, Novotného lávka 5, 116 68 Praha 1, Czech Republic (c/o Dr. Jan Novosad)

Telephone: +420 221 082 248

Fax: +420 221 082 366 or +420 233 335 529

E-mail: org@chisa.cz

Scientific Committee

Fax: +420 220 920 661

E-mail: chisa@icpf.cas.cz

CHISA website

www.chisa.cz/2004

SCIENTIFIC PROGRAM

Goals

The CHISA Congress with all its topics and specialised symposia supports the concept of sustainable development—a concept aimed at the future of mankind.

Convinced that chemical engineering includes, masters and creates most of the tools that play a key role in realising this concept, chemical engineers try to find the specific and most effective ways to maximise this effort. This striving includes formulation of new targets of individual branches of chemical engineering science and practice, developing new methods for achieving them, dissemination of relevant information among specialists from Europe and the whole world, and supporting young engineers in entering and understanding the profession.

Congress structure

The Congress consists of the four following structures:

- General topics of chemical and process engineering
- PRES 2004—Seventh Conference on process integration, modelling and optimisation for energy saving and pollution reduction
- Specialised symposia prepared in co-operation with the respective EFCE Working Parties and/or other recognised international bodies
- Exhibition MARCHES 2004

The technical program includes invited plenary lectures and keynote lectures, parallel lecture sessions, and poster sessions. Congress sections are clustered into five thematic groups.

Plenary and keynote lectures

Two invited plenary lectures will be presented at 10.10–11.00 h. after coffee/poster break during morning sessions on Monday and Tuesday. Besides of two PRES plenary lectures, there will be 50 keynote lectures delivered in the respective sessions.

Lecture and poster sessions

Ten parallel lecture sections will take place at 8.30–12.30 h. and 14.00–17.40 h. based on 20 minutes rigid schedules. For keynote lectures 40 minutes are reserved. Poster sessions will take place the whole day from 9 to 17 h. However, authors should attend their posters during the coffee/poster breaks: 9.50–10.10 h. (Mon, Tue), 10.10–10.50 h. (Wed, Thu), and 15.20–16.00 h. (every day).

Congress topics

Original contributions, process applications, case studies, state-of-the-art papers on the following subjects will be presented in sessions on

Reaction engineering, catalysis, and kinetics

Separation processes and equipment

Fluid flow and multiphase systems

Heat transfer processes and equipment

Phase equilibrium and fluid properties

Computer aided process engineering

Particulate solids

Chemical engineering education

Product development and engineering

For details see the Table "Organisation of Scientific Program".

**Seventh Conference “Process integration, modelling and optimisation for energy saving and pollution reduction”–
PRES 2004**

The Conference will be held as a specialised international conference in the framework of CHISA. It is the seventh event in the series—Prague (1996), Budapest, Hungary (1999), Prague (2000), Florence, Italy (2001), Prague (2002), Hamilton, Canada (2003).

Topics:

Energy saving technology • CO₂—Kyoto Protocol, sequestration, minimisation • Combined heat & power • Heat exchangers as equipment and integrated items • Process integration for sustainable development • Integration of renewables and energy conversion technologies • Synthesis of new thermal processes—heat pumps, heat piping • Pulp & paper, energy efficient drying technologies • Sustainable sugar production • Waste minimisation, processing and management • Thermal treatment of wastes including waste to energy • Batch processes • Dynamic, flexible and sustainable plant operation • Industrial & experimental studies • Industrial application & optimal design

Specialised symposia

Symposium on environmental engineering

Topics: Persistent organic pollutants • Advanced energy systems • Soil and water pollution • Recycling, recovery and reuse of materials • Life cycle aspects and eco-efficiency • Biomass as feedstock for chemical engineering

Symposium on safety in chemical industry

Topics: Hazard identification, assessment and reduction • Emergency, awareness and response preparedness • Integrated SHE management systems • Accident investigation • Modelling unconfined vapour cloud dispersion • UVCE and BLEVE accidents • Safe storage, handling and transportation of chemicals • Safe process changes

Symposium on multi-scale aspects of bubbly flows

(Organised in co-operation with the Engineering Academy CR)

Topics: Bubble formation and dynamics • Bubble forces • Bubble interactions in swarms • Bubbly flows in reactors and pipes • Applications

Symposium on electrochemical engineering

(Organised in co-operation with the International Society of Electrochemistry and the EFCE Working Party on Electrochemical Engineering)

Topics: Energy storage and conversion • Tailor made materials for electrochemical applications • Pollution abatement • New trends in electrochemical technology • General session

Selected papers will be published in special issue of the Journal of Applied Electrochemistry.

Symposium on micro- and mesoporous materials

Topics: Microporous and mesoporous materials • Nanosystems • Experimental techniques • Theory of sorption and mass transport • Percolation • Applications

Symposium on supercritical fluids

Topics: Phase equilibria and transport properties • Extraction and fractionation • Particle design, aerogels, porous materials • Chemical reactions and enzymatic reactions in SF • Other applications

Symposium on food processing and technology

Topics: Food structure and transport phenomena • Novel technologies and industrial problems • Thermal and non-thermal processing • Application of membrane techniques • Non-invasive measuring techniques • Physical properties of foods and their databases

Symposium on odour control and measurement

Topics: Modelling criteria for odour emissions and mission • Sampling, detection, measuring, estimating and assessing industrial odours using dynamic olfactometry and other methods • Odour dispersion modelling • Odour data quality • Case studies • Control techniques using sorption chemical scrubbers, bio-filtration and other methods

Symposium on progress in chemical technology and product engineering

Topics: Biotechnology • Oil and gas processing • High quality fuels • Petrochemistry and organic technology • Polymers • Inorganic technology and catalysts • High performance materials • Product engineering and control

Symposium on microreaction technology for process development and production

Topics: Microtools for chemical reactions and unit operations in process development • Microstructured devices for process intensification and safety • Multiscale process and plant design using microtools for chemical production • Modular microreaction systems for flexibility in research and production • Integrated microstructures for local process control • Criteria for performance enhancement using microstructured components • Manufacturing of microstructured devices and systems

Sets of summaries and pre-prints on CD-ROM

Summaries are clustered according to the thematic groups as six sets numbered from 1 to 6 and distinguished by colour cover (cf. inside back cover with Program Overview). The Set 6 and another one selected are included in the Congress fee. Among Congress materials is the CD-ROM containing full texts of all accepted lectures and posters.

Extra sets of summaries and extra CD-ROMs may be purchased at the Congress Office at a price of 10 EUR/each and 20 EUR/each, respectively. The sets and CD-ROMs can also be ordered after the Congress by contacting the Organising Committee.

Set 1 – Reaction engineering (Reaction engineering; Symposium on microreaction technology for process development and production; Symposium on electrochemical engineering; Chemical engineering education)

Set 2 – Separation processes and equipment (Absorption and distillation; Filtration & Crystallization; Membrane processes; Symposium on supercritical fluids; Phase equilibria and fluid properties; Adsorption and ion exchange; Extraction; Symposium on micro- and mesoporous materials)

Set 3 – Hydrodynamic processes and equipment (Symposium on on multi-scale aspects of bubbly flows; Fluid flow and multiphase systems; Fluidisation; Mixing; Particulate solids)

Set 4 – System engineering (Computer aided process engineering; Heat transfer processes; Conference PRES 2004)

Set 5 – Systems and technology (Symposium on food processing and technology; Symposium on odour control and measurement; Symposium on environmental engineering; Symposium on safety in chemical industry; Symposium on progress in chemical technology and product engineering)

Set 6 – General (Plenary lectures, Catalogue of Exhibitors–MARCHES 2004, List of Participants)

Publication policy

Participants will receive Congress full texts on a CD-ROM. Authors are free to publish their papers at will after the Congress.

Selected papers from PRES 2004 will be published in dedicated special issues of Applied Thermal Engineering (UK), Heat Transfer Engineering (US), Journal of Cleaner Production (US), Resources, Conservation and Recycling (US) and Integrated Processes and Energy Saving (UA).

List of plenary and keynote lectures

Plenary

A. Oberholz: Chemicals in 2010—system solutions for the customer

Graduated in chemistry (TH Aachen); doctorate in chemistry from the TH Aachen; positions in Chemische Werke Hüls AG, Hüls Silicone GmbH, Hüls AG and Degussa-Hüls AG; since 2001 member of the Board of Management of Degussa AG; since 2004 chairman of DECHEMA, Society for Chemical Engineering and Biotechnology.

E. Andreta: Towards the Lisbon goals: a knowledge based industry

Graduated in political sciences and economics (Universities of Genova and Lyon), doctorate in international relations from the Univ. Genova; professor of knowledge management at the PhD school of Politecnico di Torino; since 1995 director at the EU Commission, DG Research, Industrial Technologies.

[PRES Plenary] B. I. Master: Most frequently used heat exchangers from pioneering research to applications worldwide

[PRES Plenary] M. Narodoslawsky: Utilising renewable resources economically - new challenges and chances for process development

Keynote

Reaction engineering

V. G. Gomes: A modelling framework based on population balances for optimum operation and advanced control of emulsion polymerization

Symposium on electrochemical engineering

H. Bergmann: Photovoltaics and electrochemistry—problems in development and design of disinfection apparatuses

F. Lapique: Analysis of electrical phenomena occurring in ion-exchange assisted electro dialysis for treatment of rinsing solutions

K. Scott: Preparation and characterisation of Pt deposition on ion conducting membrane for making electrodes in the direct methanol fuel cell

Membrane processes

M. Teramoto: Removal and enrichment of gases by novel hollow fiber facilitated transport membrane module and novel capillary tube-type gas absorber/stripper module

Symposium on supercritical fluids

T. Gamse: Supercritical fluid techniques for production of micron and submicron particles

T. Lindt: Supercritical fluids in the formation of polymeric foams

Phase equilibrium and fluid properties

M. Lisal: Molecular-level simulations of reacting systems in bulk and confinement

G. Sadowski: Thermodynamics of polymer systems

Symposium on micro- and mesoporous materials

F. J. Keil: Adsorption and transport in micro- and mesoporous materials

Fluid flow and multiphase systems

S. Alekseenko: Large-scale structures in impinging jets and falling films

A. Biesheuvel: Vorticity and bubbly flows

A. Cartellier: Induced agitation and the prediction of phase distributions in laminar bubbly flows

M. Diaz: The steel converter, a stirred G-L-L' multiphase flow system

H. A. Jakobsen: Challenges on population balance modelling of the coalescence and breakage processes in bubble column reactors

R. P. Joseph: Fluid dynamics of floating particles

A. Serizawa: Flow characteristics and application of micro bubble containing bubbly two-phase flow

Particulate solids

H. Kalman: Considering mutual interactions between operating units in the chemical industry

F. Saito: Preparation of nano-particles by means of mechanochemical reaction

J. Tomas: Mechanics of particle adhesion

Computer aided process engineering

R. Gani: Computer-aided methods and tools for product-process synthesis & design

PRES 2004

R. Adonyi: Effective scheduling of a large-scale paint production system

M. Araszkievicz: Microwave drying of porous materials

P. Chan: Flexibility study of a utility system

A. de Rijcke: Reducing CO₂ emissions in heat-integrated distillation systems

K. Iwakabe: Multicomponent separation by heat-integrated distillation column (HIDiC)

- K. H. Kaggerud: Chemical and process integration: Synergies from co-production of power and chemicals from natural gas, with CO₂-capture
- D. J. Kukulka: Transient evaluation of process surfaces used in fouling applications
- J. Manninen: An integrated multiobjective design tool for pulp and paper process design
- I. Mueller: Rate-based modelling of dividing wall columns—a new application to reactive systems
- S. Perry: Experiences and future developments in e-learning and e-teaching of engineering education
- M. Picon-Nunez: Alternative design approach for multipass and multi-stream plate heat exchangers for use in heat recovery systems
- G. G. Pranghofer: High durability ePTFE membrane filtration and catalytic destruction of polychlorinated dibenzo-p-dioxins and dibenzofurans long-term experience at European incineration plants
- R. Smith: Rethinking process development in fine and specialty chemicals
- J. Söderman: Structural optimisation of distributed energy systems
- S. Tarasiewicz: Modeling, simulation and control; case study for wood drying systems (WDS) and clinker rotary kiln (CRK)
- B. Thonon: Challenge for industrial, building and residential heat pumps
- D.-C. Wang: Applications of MATLAB-based software to drying simulation
- G. Wozny: Reactive distillation towers: new strategies for start up
- G. Wozny: Improvement of learning of process technology using modern information technology - keynote lecture

Symposium on food processing and technology

- M. Houška: High pressure and foods
- B. M. McKenna: Advances in radio frequency and ohmic heating of foods
- P. Nesvadba: The impact of food processing on quality
- D.-W. Sun: Development of a mathematical model for vacuum cooling of cooked meats

Symposium on environmental engineering

- H. Hofbauer: Biomass gasification—a promising route for the future
- I. Holoubek: The case of persistent, bioaccumulative and toxic compounds (PBTs) in the environment
- A. Thompson: The fate and removal of pharmaceuticals during sewage treatment

Symposium on progress in chemical technology and product engineering

- H. Kittel: Hydrocracking versus fluid catalytic cracking for production of clean fuels
- H.-P. Schmauder: Bioavailability of substrates in processes of biodegradation and biotransformation
- P. L. Silveston: Production of sulfuric acid or organicsulfonates using a cyclic process with an activated carbon catalyst and supercritical carbon dioxide as an extractant

Exhibition MARCHES 2004

MARCHES 2004—the MARKET of CHEMICAL Engineering and Services will take place from Tuesday, 27 August to Thursday, 29 August in the premises of the CHISA 2004 Congress. The Exhibitors are listed in the Catalogue (Set 6 of summaries).

EFCE Meetings and other events

Meeting of EFCE Task Group on Public Relations, Sunday 22 August, 14.00 h.

Meeting of the Executive Board of EFCE, Monday, 23 August, 11.30 h.

Meeting of EFCE WP Communion and Classification, Wednesday, 25 August, 13.30 h; industrial visit at 8 h., dinner at 19 h.

Meeting of the Steering Committee “Multiphase molten metal flows”, Thursday, 26 August, 14.30 h.

SOCIAL AND LADIES PROGRAM

All invited get-together events

All Congress participants and accompanying persons are cordially invited to take part.

Festive Congress Opening

Municipal House of Prague, Smetana Hall

Opening addresses, awards, and a short organ recital. Glass of wine and refreshment in the Ceremonial saloons.

Sunday, 22 August 20–22 h.

The Municipal House ("Obecní dům") is located at Metro line B, station Náměstí Republiky (address: Náměstí Republiky 5, Praha 1).

Admission is only on invitation card included in Congress materials.

Congress Concert

Dvořák Hall of the Rudolfinum

The Czech Chamber Philharmonic Orchestra, conductor L. Svárovský, soloist M. Kasík (piano).

Program: W. A. Mozart: Don Giovanni, opera overture; A. Dvořák: Concert in G minor for piano and orchestra; F. Mendelssohn-Bartholdy: Symphony No. 4 in A major ("Italian").

Tuesday, 24 August 20–22 h.

The Rudolfinum is located at Metro line A, station Staroměstská (address: Alšovo nábřeží 12, Praha 1). For the admittance, please exchange the invitation card included in Congress materials for the admission ticket in the Congress office during Monday, at the latest.

Festive Farewell Party

Restaurant in Masaryk Hostel (address: Thákurova St. 1, Praha 6-Dejvice)

Congress Festive Farewell Party with dinner buffet, wine and beer is the main get-together event.

Thursday, 26 August 20–23 h., Ticket: 15 EUR/person

Admission tickets will receive participants who ordered them in advance. Additional tickets can be purchased at the Registration cash desk.

Prague sightseeing tours

Prague sightseeing

Prague sightseeing targeted to the Prague centre and Prague Castle (bus and walk).

Sunday, 22 August, 13–17 h.

Price: 25 EUR (includes: transport, drinks in the bus, English speaking guide)

Prague Castle---Hradčany

Visit of the most beautiful places of the Prague Castle and its area.

Monday, 23 August 2004, 8–12 h.

Price: 28 EUR (includes: transport, drinks in the bus, English speaking guide, entrance fees)

River Cruise

River Cruise on the Vltava River with sightseeing of Prague from the steamer board.

Tuesday, 24 August, 8–12 h.

Price: 28 EUR (includes: transport, cruise information pamphlet, English speaking guide)

The Old Town

Walk through the Prague Old Town, commentary on monuments and important or interesting sights.

Wednesday, 25 August, 8–12 h.

Price: 25 EUR (includes: transport, drinks in the bus, English speaking guide)

Vyšehrad

Visit to the cultural monument Vyšehrad. Vyšehrad is the rock and complex of monuments above the Vltava river with its two dark slender spires as an inseparable part of the Prague skyline. The mysterious history is bound to the legends from ancient times.

Thursday, 26 August, 8–12 h.

Price: 28 EUR (includes: transport, drinks in the bus, English speaking guide)

Bus trips

Český Krumlov

Visit of the town Český Krumlov, walk through the charming city with over three hundred picturesque historical buildings situated above the meandering Vltava river in Southern Bohemia. This town is recorded in the UNESCO World Cultural and Natural Heritage list. Visit of interiors of the Castle and Chateau and walk in the Castle gardens. Lunch included.

Monday, 23 August, 9–18.30 h.

Price: 55 EUR (includes: transport, drinks in the bus, English speaking guide, entrance fees, lunch: the old Czech cuisine).

Křivoklát Castle

Visit of interiors of the one of the oldest castles of the Czech kings including beautiful castle chapel, Royal and Knightly Halls with display of gothic paintings and sculptures, libraries with over 52 thousands books, famous prison and torture room with torture instruments, pleasant walk on the castle walls, visit of monumental tower with hunting guns and view of the countryside.

Monday, 23 August, 12.30–18.30 h.

Price: 35 EUR (includes: transport, drinks in the bus, English speaking guide, entrance fees)

Kutná Hora

Visit of the town Kutná Hora—the medieval town founded in the 13th century in the vicinity of a silver mines, 65 km east of Prague. The splendid gothic St. Barbara cathedral and the former Royal Mint once coining Prague silver groschen.

Tuesday, 24 August, 9–18.30 h.

Price: 55 EUR (includes: transport, drinks in the bus, English guide, entrance fees, lunch, souvenir)

Konopiště Castle

Visit of the oldest part of Konopiště Castle incl. representative rooms, hunting hallways with trophies, shooting gallery, armoury, chapel and garden with greenhouses. The castle was built in early French Gothic style in the 13th century and rebuilt around 1887 as a hunting chateau by the successor to the Austrian throne Ferdinand d'Este.

Tuesday, 24 August, 12.30–18.30 h.

Price: 35 EUR (includes: transport, drinks in the bus, English speaking guide, entrance fees)

Karlovy Vary

A bus tour through the picturesque West Bohemian countryside to Karlovy Vary (Carlsbad). The world-renowned spa founded in the 14th century known for its twelve thermal springs and attractive colonnades and parks. An excursion to Becher factory manufacturing the famous Czech liquor ("Becherovka"). Lunch included.

Wednesday, 25 August, 9–18.30 h.

Price: 55 EUR (includes: transport, drinks in the bus, English speaking guide, excursion to Becher factory with degustation, souvenir, refreshment)

Mělník Chateau and vineyards with wine degustation

Visit of the interiors of the Mělník Chateau including rooms of Chancellor Lobkowitz, halls with maps, concert hall and Chateau cellars, walk through vineyards and wine degustation.

Wednesday, 25 August, 12.30–18.30 h.

Price: 35 EUR (includes: transport, drinks in the bus, English speaking guide, entrance fees)

Karlštejn Castle

Visit of the interiors of the Karlštejn Castle and its surroundings, walk by the marvelous way to the Castle, visit of the Wax Museum with portraits of the famous Czech kings and other personalities.

Thursday, 26 August, 12.30–18.30 h.

Price: 35 EUR (includes: transport, drinks in the bus, English speaking guide, entrance fee to the Castle)

Evening program

Night views of Prague from TV tower

An evening spent on the highest tower in Prague—the Žižkov Television Tower with buffet dinner and explanation to the views on Prague from elevation of 100 m.

Monday 23 August, 19.30–23.30 h.

Price: 45 EUR (includes: transport, English speaking guide, dinner without drinks, entrance fee)

GENERAL TIME SCHEDULE

Day	Scientific program	Time	Half-day trips	Whole-day trips	Evening program
Saturday 21 August	Arrivals Registration	14–20			
Sunday 22 August	Arrivals Registration	10–19	Prague sightseeing 13–17		Congress Opening, The Municipal House 20–22, all invited
Monday 23 August	Registration Congress Office Lecture sessions Plenary lecture Poster session	8–17 (Mon–Thu) 8.30–12.30, 14–17.40 10.10–11 9–17	Prague Castle 8–12 Křivoklát Castle 12.30–18.30	Český Krumlov 9–18.30	Night views of Prague from TV tower 19.30–23.30
Tuesday 24 August	Lecture sessions Plenary lecture Poster session MARCHES 2004 Exhibition	8.30–12.30, 14–17.40 10.10–11 9–17 9–17	River Cruise 8–12 Konopiště Castle 12.30–18.30	Kutná Hora 9–18.30	Congress Concert, Rudolfinum 20–22 all invited
Wednesday 25 August	Lecture sessions Poster session MARCHES 2004 Exhibition	8.30–12.30, 14–17.40 9–17 9–17	The Old Town 8–12 Mělník Chateau and vineyards 12.30–18.30	Karlovy Vary 9.00–18.30	
Thursday 26 August	Lecture sessions Poster session MARCHES 2004 Exhibition	8.30–12.30, 14–17.40 9–17 9–17	Vyšehrad 8–12 Karlštejn Castle 12.30–18.30		Festive Farewell Party, Restaurant in Masarykova kolej 20–23
Friday 27 August	Departures				

ORGANISATION OF SCIENTIFIC PROGRAM

Topic	Lecture session	Page	Poster session	Page
Plenary lectures		15		
1. Reaction engineering	A1–A8	15	P1	40
2. Separation processes				
Absorption and distillation	C1–C3	19	P3	45
Membrane processes	C5–C6	21	P3	46
Adsorption and ion exchange	D4	23	P3	49
Extraction	D5–D6	23	P3	45
Filtration & Crystallisation	C4	20	P5	50
3. Phase equilibria and fluid properties	D1–D3	22	P3	47
4. Hydrodynamic processes				
Fluid flow and multiphase systems	E2–E7	25	P5	55
Fluidisation	E8	27	P5	57
Mixing	F1	27	P5	55
5. Computer aided process engineering	G1–G5	30	P5	50
6. Chemical engineering education	B4	18	P1	44
7. Heat transfer processes	G6–G8	31	P5	54
8. Particulate solids	F5–F8	28	P5	58
9. Seventh Conference PRES-2004	F2–F4	27	P5	52
	H1–H8	32		
10. Symposium on environmental engineering	I5–I8	36	P7	58
11. Symposium on safety in chemical industry	J1–J2	38	P7	61
12. Symposium on multi-scale aspects of bubbly flows	E1	24	P5	55
13. Symposium on electrochemical engineering	B5–B7	18	P1	44
14. Symposium on micro- and mesoporous materials	D7–D8	24	P3	49
15. Symposium on supercritical fluids	C7–C8	21	P3	47
16. Symposium on food processing and technology	I1–I3	35	P7	61
17. Symposium on odour control and measurement	I4	36	P7	60
18. Symposium on progress in chemical technology	J3–J6	38	P7	62
19. Symposium on microreaction technology	A3	16	P1	43

PROGRAM

PLENARY LECTURES

Monday

A1.0 10.10 Chemicals in 2010 - system solutions for the customer. **A. Oberholz** (Degussa, Düsseldorf, DE) [1492]

Chairperson: **J. Koubek**

Tuesday

A3.0 10.10 Towards the Lisbon goals: the knowledge based industry. **E. Andreta** (European Commission, Brussels, BE) [1493]

Chairperson: **J. Drahoš**

A

A1 Lectures – Monday morning Reaction engineering

Chairpersons: **F. Pla, J. Kosek**

A1.1 8.30 Improved kinetic data from product analysis: A chemometrical approach. ***D. Kubička, M. Rönnholm, T. Salmi, D. Y. Murzin** (Abo Akad. Univ., FI) [592]

A1.2 8.50 A new method of processing the time-concentration data of reaction kinetics. **Y. L. Yeow, *S. R. Wickramasinghe¹, B. B. Han, Y. K. Leong** (Univ. Melbourne, AU; ¹Colorado State Univ., Fort Collins CO, US) [169]

A1.3 9.10 Chemical reaction analyses of anhydride-cured epoxy resins. **W. Chian, *D. C. Timm¹** (S. Dakota Sch. Mines, Rapid City SD, US; ¹Univ. Nebraska, Lincoln NE, US) [1678]

A1.4 9.30 Multi-cycles reduction and oxidation of CuO particles in the chemical-looping combustion. **F. Chahma, *S. Roux, A. Bensakhria, G. Antonini** (UMR CNRS, Compiegne, FR) [1624]

9.50 Coffee break, plenary lecture

A1.5 11.10 Keynote lecture: A modelling framework based on population balances for optimum operation and advanced control of emulsion polymerization. **B. Alhamad, J. A. Romagnoli, *V. G. Gomes** (Univ. Sydney, AU) [1292]

A1.6 11.50 Modelling of the elaboration of high impact polyamide blends synthesis by reactive extrusion. **R. Rached, S. Hoppe, *F. Pla** (LSCG, Nancy, FR) [644]

A1.7 12.10 Degassing of porous particles of semi-crystalline polyolefins. ***A. Novak, M. Bobák, J. Kosek** (Inst. Chem. Technol., Praha, CZ) [1034]

A1.8 12.30 Multizone circulating reactor modeling for gas-phase polymerization. ***F. A. N. Fernandes, L. M. F. Lona¹** (Univ. Fed. Rio Grande Norte, Natal, BR; ¹Univ. Campinas, BR) [84]

A1.9 12.50 New catalyst for depolymerization of high density polyethylene to fuel. **B. Rouzbehani, *N. Sallamie¹, A. Yousefi** (Pet. Univ. Technol., Abadan, IR; ¹Iran Univ. Sci. Technol., Tehran, IR) [903]

A2 Lectures – Monday afternoon Reaction engineering

Chairpersons: **R. Buchholz, P. Hasal**

A2.1 14.00 Development of a monolithic bioreactor: carbon ceramic composites as carriers for enzyme immobilization. ***K. M. de Lathouder, F. Kapteijn, J. A. Moulijn** (Delft Univ. Technol., NL) [527]

A2.2 14.20 Multi-functional unit combining a fuel cell and an enzyme electro-membrane reactor: Concepts, design, experiments. ***R. Kukula, T. Schultz¹, T. Schröder¹, K. Sundmacher¹, P. Hasal** (Inst. Chem. Technol., Praha, CZ; ¹Max-Planck-Inst. Dyn. Compl. Tech. Syst., Magdeburg, DE) [1138]

A2.3 14.40 The insect cell - an effective expression system. ***R. Buchholz, H. Hübner** (Univ. Erlangen-Nürnberg, DE) [1314]

A2.4 15.00 Studies on the production of penicillin G acylase using *Escherchia coli* ATCC11105. ***C. Ravikumar, T. Viruthagiri** (Annamalai Univ., Annamalai Nagar, IN) [1342]

15.20 Coffee break, poster session

A2.5 16.00 The inhibition of nitrification by reaction intermediates: the modified Anthonisen diagram. ***S. R. Juliatuti, J. Baeyens¹, J. Suwarno, T. Ismail, A. S. Musfil, J. Degreve²** (Inst. Technol., Surabaya, ID; ¹Univ. Antwerpen, BE; ²Cathol. Univ. Leuven, Heverlee, BE) [759]

A2.6 16.20 Lipase catalysed synthesis of biotensides from renewable sources. ***E. M. del Amor Villa, R. Wichmann** (Univ. Dortmund, DE) [275]

A2.7 16.40 Influence of media formulation on the productivity of the bioinsecticide nematode *Steinernema carpocapsae*, during the monoxenic liquid production. **J. Batalla**

Mayoral, A.-I. Rodríguez-Hernandez, *N. Chavarría-Hernández (Univ. Aut. Estado Hidalgo, Tulancingo, MX) [599]

A2.8 17.00 Study of dextran enzymatic synthesis using maltose as acceptor: yield and molecular weight. *S. Rodrigues, L. M. F. Lona¹, T. T. Franco¹ (Univ. Fed. Rio Grande, Natal, BR; ¹Univ. Campinas, BR) [108]

A2.9 17.20 Production of fructooligosaccharides catalyzed by immobilized fructosyl transferase. *Z. Csanádi, C. Sisak (Univ. Veszprém, HU) [1137]

A3 Lectures – Tuesday morning Symposium on microreaction technology for process development and production

Chairpersons: H. Viljoen, D. Šnita

A3.1 8.30 New plant concepts using methods based on microchemical engineering. *D. Kirschneck, M. Kober, A. Wojik¹, R. Marr¹ (Microinnova, Graz, AT; ¹Tech. Univ. Graz, AT) [657]

A3.2 8.50 Micro reactor for selective oxidation of CO in low power fuel cell applications. *V. Cominos, V. Hessel, C. Hofmann, G. Kolb, R. Zapf, E. Delsman¹, M. de Croon¹, J. Schouten¹ (Inst. Mikrotech., Mainz, DE; ¹Eindhoven Univ. Technol., NL) [268]

A3.3 9.10 The usage of microreaction technology in liquid-liquid extraction processes. *A. Wojik, D. Kirschneck¹, M. Kober, R. Marr (Univ. Technol. Graz, AT; ¹Microinnova, Graz, AT) [416]

A3.4 9.30 Mathematical modelling of ionic micro- and nano-systems. *D. Šnita, T. Postler, J. Lindner, M. Příbyl, J. Kosek, M. Marek (Inst. Chem. Technol., Praha, CZ) [626]

9.50 Coffee break, plenary lecture

A3.5 11.10 Experiments with micro- and nanostructured systems under influence of an external electric field. Z. Slouka, *J. Lindner, T. Postler, D. Šnita (Inst. Chem. Technol., Praha, CZ) [565]

A3.6 11.30 Principles of rapid polymerase chain reactions: mathematical modeling and experimental verification. H. Viljoen (Univ. Nebraska, Lincoln, US) [1403]

A3.7 11.50 Application of laboratory micro-reactor in theoretical and applied technological research of steam cracking. *P. Zámstný, Z. Bělohav, T. Herink (Inst. Chem. Technol., Praha, CZ) [895]

A3.8 12.10 Effects of convection on spatiotemporal solutions in a model of a cross-flow reactor. *T. Trávníčková, M. Kohout, I. Schreiber, M. Kubicek (Inst. Chem. Technol., Praha, CZ) [391]

A3.9 12.30 Modelling of automotive catalytic converters for diesel engines. *D. Kryl, P. Kočí, M. Kubicek, M. Marek, T. Maunula¹, M. Harkonen¹ (Inst. Chem. Technol., Praha, CZ; ¹Kemira Ecocat Catalyst R&D, Oulu, FI) [1230]

A4 Lectures – Tuesday afternoon Reaction engineering

Chairpersons: R. Pohorecki, M. Marek

A4.1 14.00 Numerical simulations of non-isothermal gas absorption with an exothermic reaction. *R. Pohorecki, W. Moniuk, E. Molga (Warsaw Univ. Technol., PL) [90]

A4.2 14.20 Nonlinear dynamics in reactor separator systems. K. P. Zeyer, A. A. Kulkarni, *A. Kienle¹ (Max-Planck Inst. Dyn. Kompl. Tech. Syst., Magdeburg, DE; ¹O. von Guericke Univ., Magdeburg, DE) [312]

A4.3 14.40 Investigation of methanol synthesis under transient and steady-state conditions. *B. Vollbrecht, A. Seidel-Morgenstern (Otto-von-Guericke Univ., Magdeburg, DE) [608]

A4.4 15.00 Application of transient methods in three-phase catalysis: Asymmetric catalytic hydrogenation. *E. Toukonitty, P. Maki-Arvela, J. Wirta, T. Salmi, D. Y. Murzin (Abo Akad. Univ., FI) [335]

15.20 Coffee break, poster session

A4.5 16.00 An approximate solution for a transient two phase-CSTR with non-linear kinetics. *F. J. Valdés Parada, J. A. Ochoa Tapia (Univ. Aut. Metrop. Iztapalapa, Mexico, MX) [93]

A4.6 16.20 Modelling of CO oxidation in digitally reconstructed porous Pt/gamma-Al₂O₃ catalyst. *P. Kočí, F. Štěpánek¹, M. Kubicek, M. Marek (Inst. Chem. Technol., Praha, CZ; ¹Imperial Coll. Sci., London, UK) [430]

A4.7 16.40 How to avoid the modelling of interfacial mass transfer in the presence of chemical reactions and interfacial mass transfer effects. T. Salmi, *J. Wirta, M. Kangas, N. Musakka (Abo Akad. Univ., FI) [884]

A4.8 17.00 Dynamical regimes in two mass-coupled CSTRs with a chemical pH-oscillatory reaction. *O. Pešek, L. Schreiberová, I. Schreiber (Inst. Chem. Technol., Praha, CZ) [540]

A4.9 17.20 A mathematical model for deactivation of methanol synthesis catalyst by sintering. S. Sahebdelfar, *M. Kazemeini¹ (Nat. Iran. Pet. Co., Tehran, IR; ¹Sharif Univ. Technol., Tehran, IR) [445]

A5 Lectures – Wednesday morning Reaction engineering

Chairpersons: T. Salmi, V. Tukač

A5.1 8.30 The interaction of chemical reactions and transport: Combined reactors and exchangers. S. W. Churchill (Univ. Pennsylvania, Philadelphia PA, US) [1336]

A5.2 8.50 Spouted bed reactors for upgrading of wastes. R. Aguado, R. Prieto, *P. González, M. Arabiourrutia, M. Olazar, J. Bilbao (Univ. Pais Vasco, Bilbao, ES) [278]

A5.3 9.10 Hydrogenation of Citral: Slurry or Monolith?. *J.-P. Mikkola, J. M. Bermechea, J. Aumo, D. Y. Murzin (Abo Akad. Univ., FI) [427]

A5.4 9.30 Residence time distribution of solids in a fluidized bed fuel reactor of a chemical-looping combustion prototype. *B. Kronberger, G. Löffler, H. Hofbauer (Vienna Univ. Technol., Wien, AT) [1166]

A5.5 9.50 Different configurations and upscaling of two-zone fluidized bed reactor for selective oxidation of butane to maleic anhydride. **J. Gascon, C. Tellez, J. Herguido, M. Menendez** (Univ. Zaragoza, ES) [1082]

10.10 Coffee break

A5.6 10.50 Selective oxidation of olefins by molecular oxygen in a structured reactor. **A. Lapkin, B. Bozkaya, P. Plucinski** (Univ. Bath, UK) [1347]

A5.7 11.10 Modelling of radiant fields in flat heterogeneous photoreactors. **A. Brucato, A. E. Cassano¹, F. Grisafi, G. Montante², L. Rizzuti, G. Vella** (Univ. Palermo, IT; ¹INTEC, Santa Fe, AR; ²Univ. Bologna, IT) [1380]

A5.8 11.30 Selectivity of wet oxidation in trickle-bed reactor at periodical operation. **V. Tukač, V. Chyba, J. Hanička** (Inst. Chem. Technol., Praha, CZ) [365]

A5.9 11.50 Vortex centrifugal multiphase reactor. **A. O. Kuzmin, V. N. Parmon, M. K. Pravdina¹, A. I. Yavorsky², N. I. Yavorsky¹** (Boskovsk Inst. Catal., Novosibirsk, RU; ¹Inst. Thermophys., Novosibirsk, RU; ²Novosibirsk State Tech. Univ., RU) [779]

A5.10 12.10 Stability and steady states multiplicity in gas-liquid continuous stirred tank reactor with taking into account the temperature influence on gas solubility. **E. F. Steffoglio, I. V. Kuchin, A. V. Kravtsov** (Inst. Coal&Coal Chem., Kemerovo, RU) [725]

A5.11 12.30 Non-oxidative non-catalytic methane conversion to high molecular weight hydrocarbons using dielectric barrier discharge reactor. **M. H. Tarverdi, Y. Moratazavi, A. A. Khodadadi, S. S. Mohajezadeh** (Univ. Tehran, IR) [958]

A5.12 12.50 Modeling and application of the continuous two impinging streams reactors in heterogeneous liquid-liquid reactions. **M. Sohrabi, B. Zarekar** (Amirkabir Univ. Technol., Tehran, IR) [153]

A6 Lectures – Wednesday afternoon Reaction engineering

Chairpersons: **D. Y. Murzin, B. Bernauer**

A6.1 14.00 Heterogeneous photocatalytic degradation of gaseous trichloroethylene: experimental data and new kinetic model. **K. Demeestere, A. De Visscher¹, J. Dewulf, M. Van Leeuwen, H. Van Langenhove** (Ghent Univ., BE) [258]

A6.2 14.20 Kinetics of n-butane skeletal isomerization over Pt-H-mordenite. **V. Niemenen, M. Kangas, T. Salmi, D. Y. Murzin** (Abo Akad. Univ., FI) [418]

A6.3 14.40 Kinetic modelling of ethane and propane gas phase oxidative dehydrogenation. **M. Machli, C. Boudouris, A. A. Lemonidou** (Aristotle Univ. Thessaloniki, GR) [612]

A6.4 15.00 Production of conjugated linoleic acid by heterogeneous catalysis - kinetic modeling. **A. Bernas, B. Holmbom, T. Salmi, D. Y. Murzin** (Abo Akad. Univ., FI) [816]

15.20 Coffee break, poster session

A6.5 16.00 Reaction intermediates in selective catalytic reduction of NO by propene in the presence of excess oxygen over Pt-loaded zeolite catalysts. **M. E. Huuhtanen, K. Rahkamaa-Tolonen¹, T. Maunula¹, R.-L. Keiski** (Univ. Oulu, FI; ¹Ecoact Oy, Oulu, FI) [1186]

A6.6 16.20 Oxidation of chlorinated volatile organic compounds (CVOs) in a bubble column photochemical reactor. In search for a cost-effective reactor design. **D. Alibegic, S. Tsuneda, A. Hirata** (Waseda Univ., Tokyo, JP) [1103]

A6.7 16.40 Single step H₂S removal using chelated iron solution: reaction kinetics and reactor modeling. **A. Tavasoli, M. Ghalbi Ahangari, A. Karimi, H. R. Bakhtyari, M. A. Khodagholi** (Res. Inst. Pet. Ind., Tehran, IR) [719]

A6.8 17.00 Kinetic modeling of the catalytic hydrogenation of rapeseed oils. **A. Ashoori, M. Taghizadeh¹, M. Rostami Dehka²** (Univ. Sci. Technol., Babol, IR; ¹Mazandran Univ., Babol, IR; ²NIOSC, Ahwaz, IR) [678]

A6.9 17.20 Kinetics of the esterification reaction of acetic acid with butanol over Amberlyst 15 catalyst. **F. Mallalah, S. Ali, K. Mahdi** (Kuwait Univ., KW) [1004]

A7 Lectures – Thursday morning Reaction engineering

Chairpersons: **B. M. Vogelaar, F. Stepanek**

A7.1 8.30 How do HDS catalysts work? New insights in reaction mechanism and active phase using quasi in-situ FTIR. **B. M. Vogelaar, A. D. van Langeveld, S. Eijsbouts¹, J. A. Moulijn** (Delft Univ. Technol., NL; ¹Akzo Nobel Chem., Amsterdam, NL) [88]

A7.2 8.50 Pd-Ag/SiO₂ and Pd-Cu/SiO₂ cogelled xerogel catalysts for selective hydrodechlorination of 1,2-dichloroethane into ethylene. **S. Lambert, F. Ferauch, A. Brasseur, J.-P. Pirard, B. Heinrichs** (Univ. Liege, BE) [64]

A7.3 9.10 Nanostructured La-Cr perovskite catalysts for diesel soot combustion. **D. Fino, N. Russo, G. Saracco, V. Specchia** (Politech. Torino, IT) [653]

A7.4 9.30 Effective transport properties of the reconstructed porous catalyst carriers. **G. Salejova, J. Kosek, V. Nevala, O. Šolcova¹, P. Schneider¹** (Inst. Chem. Technol., Praha, CZ; ¹Inst. Chem. Proc. Fundam., Praha, CZ) [930]

A7.5 9.50 Investigating the role of pore structure and hydroxyl characteristics on selectivity in enantioselective hydrogenation reactions. **P. Steiner, M. D. Mantle, N. Dummer¹, G. J. Hutchings¹, L. F. Gladden** (Univ. Cambridge, UK; ¹Cardiff Univ., UK) [172]

10.10 Coffee break

A7.6 10.50 Deactivation of microporous catalysts during non-oxidative methane aromatization. **V. Fila, Š. Špatenka, B. Bernauer, Z. Sobalík¹** (Inst. Chem. Technol., Praha, CZ; ¹J. Heyrovsky Inst. Phys. Chem., Praha, CZ) [1265]

A7.7 11.10 Pt-containing polymeric catalytic systems in direct L-corboside oxidation to 2-keto-L-gulonic acid. **N. Lakina, E. M. Sulman, V. Matveeva, S. Sidorov¹, P. Valetsky¹, L. Tsvetkova¹, L. Bronstein²** (Tver Tech. Univ., RU; ¹Inst. Organoelem. Compds., Moskva, RU; ²Indiana Univ., Bloomington, IN, US) [193]

A7.8 11.30 A study on the effect of various promoters on the characteristics of Cu/ZnO/Al₂O₃ catalyst. **M. Y. Khosravi, S. N. Ashrafzadeh, F. Feysi** (Iran Univ. Sci. Technol., Tehran, IR) [224]

A7.9 11.50 Synthesis and application of nanophase nickel ferrite catalysts. **K.-S. Lin, C.-L. Kuo, I.-F. Kuo** (Yuan-Ze Univ., Chung-Li, TW) [319]

A7.10 12.10 Oxidative dehydrogenation of propane over zeolite catalyst in fixed-bed reactor. **W. Wójcik, E. Jagielska, R. Mostowicz, T. Sadoska, M. Dyzewski, S. Szarlić** (Ind. Chem. Res. Inst., Warszawa, PL) [259]

A7.11 12.30 Optimization of direct conversion of methane to methanol in a catalytic fixed bed reactor. **L. Vafadjo, M. Sohrabi¹** (Azad Univ., Tehran, IR; ¹Amirkabir Univ., Tehran, IR) [174]

A7.12 12.50 Comparison the effects of ruthenium and rhodium on characterization and catalytic properties of cobalt catalyst in Fischer-Tropsch synthesis. ***A. Tavasoli**, **A. Karimi**, **Y. Mortazavi**¹, **A.-A. Khodadadi**¹, **K. Sadagiani**, **M. Mousavian**¹ (Res. Inst. Pet. Ind., Tehran, IR; ¹Univ. Tehran, IR) [179]

B

A8 Lectures – Thursday afternoon Reaction engineering

Chairpersons: **J. Dudas**, **J. Hanika**

A8.1 14.00 Intensified ring hydrogenation processes. **H. Haringa** (Davy Process Technology, Pratten, CH) [89]

A8.2 14.20 Sequential hydroprocessing (SHP) for diesel upgrading. **R. Galiasso T.** (Univ. Simon Bolivar, Miranda, VE) [65]

A8.3 14.40 Pyrolysis of HDPE in the 450-700 °C range. ***P. González**, **R. Aguado**, **R. Prieto**, **M. Olazar**, **J. Bilbao** (Univ. Pais Vasco, Bilbao, ES) [279]

A8.4 15.00 Improved industrial process of high-octane hydrocarbon and oxygenated motor fuel production. ***E. V. Pisarenko**, **A. G. Ban**, **V. N. Pisarenko**, **M. E. Novikov**, **L. S. Gordeev** (Mendeleev Univ. Chem. Technol., Moskva, RU) [591]

15.20 Coffee break, poster session

A8.5 16.00 Test reactions for industrial naphtha reforming catalysts characterisation: comparative behaviour between Sn or Re addition to Pt/Al₂O₃ catalyst. ***B. Inarra**, **M. P. González-Marcos**, **J. M. Guil**¹, **M. A. Gutiérrez-Ortiz** (Univ. Pais Vasco, Bilbao, ES; ¹Inst. Rocasolano, Madrid, ES) [745]

A8.6 16.20 Hydrogenation of thymol in a trickle bed reactor. ***J. Dudas**, **J. Hanika**¹, **J. Lepuru**, **M. Barhuysen** (Bio/Chemtek CSIR, Modderfontein, ZA; ¹Inst. Chem. Proc. Fundam., Praha, CZ) [1073]

A8.7 16.40 Feedstock quality and operational conditions predict FCC product yields. ***M. E. Mariaca-Dominguez**, **S. Rodriguez-Salomon**, **D. Salazar-Sotelo** (Inst. Mex. Pet., Mexico City, MX) [1129]

A8.8 17.00 Development of xylene isomerization process over Pt/ZSM-5. **C.-K. Huang**, **S. D. Liu**, **T.-C. Tsai**¹, ***I. Wang** (Nat. Tsing-Hua Univ., Hsinchu, TW; ¹Nat. Univ. Kaohsiung, TW) [1362]

A8.9 17.20 Catalytic reforming with high activity catalyst. **A.-A. S. Kadhum**, ***M. A. B. Oun**, **M. M. Al-Halluj** (Azzawiya Oil Ref. Co., LY) [486]

B4 Lectures – Tuesday afternoon Chemical engineering education

Chairpersons: **D. G. Wood**, **S. Farrell**

B4.1 14.00 Beer, water, and coffee: hands-on introduction to product design. ***S. Farrell**, **M. J. Savelski**, **R. P. Hesketh**, **C. S. Slater**, **J. Kauser** (Rowan Univ., Glassboro NJ, US) [477]

B4.2 14.20 The undergraduate chemical engineering design project - where is it heading? **D. Brennan** (Monash Univ., Clayton Vic., AU) [766]

B4.3 14.40 Chemical engineering education and "output driven accreditation" - how are the world's universities meeting this challenge?. ***D. G. Wood**, **D. C. Shallcross**, **M. J. Parkinson** (Univ. Melbourne, AU) [1281]

B4.4 15.00 A model for collaboration between academia and industry. ***S. Farrell**, **M. J. Savelski**, **R. P. Hesketh**, **C. S. Slater** (Rowan Univ., Glassboro NJ, US) [447]

15.20 Coffee break, poster session

B4.5 16.00 A new chemical engineering senior elective course: principles of food engineering. **M. J. Savelski** (Rowan Univ., Glassboro NJ, US) [77]

B4.6 16.20 New approach to learner evaluation of an undergraduate engineering course. ***K. Tannous**, **E. M. Zactiti** (UNICAMP, Campinas, BR) [655]

B4.7 16.40 Process Simulators in the ChE curriculum. ***M. J. Savelski**, **K. Dahm**, **S. Farrell**, **R. P. Hesketh** (Rowan Univ., Glassboro NJ, US) [76]

B5 Lectures – Wednesday morning Symposium on electrochemical engineering

Chairpersons: **A. Wragg**, **H. Bergmann**

B5.1 8.30 Keynote lecture: Analysis of electrical phenomena occurring in ion-exchange assisted electro dialysis for treatment of rinsing solutions. **A. Mahmoud**, **L. Muhr**, ***F. Lapique** (CNRS-ENSIC, Nancy, FR) [1482]

B5.2 9.10 Electro dialysis of aqueous ammonium sulphate solutions. **I. Simniceanu**, **I. L. Cotei**, ***M. Harasek**¹, **A. Friedl**¹ (Tech. Univ., Iasi, RO; ¹Tech. Univ., Wien, AT) [1246]

B5.3 9.30 Diaphragm selection for the descending bed electrowinning cell. ***D. J. Robinson**, **S. A. MacDonald**, **J. Křišťál**¹, **J. Ondráček**¹, **V. Jiřičný**¹ (Dremco Inc., Phoenix AZ, US; ¹Inst. Chem. Proc. Fundam., Praha, CZ) [1059]

B5.4 9.50 Wastewater treatment using a rotating barrel electroplater. ***D.-T. Chin**, **C.-D. Zhou** (Clarkson Univ., Potsdam NY, US) [1288]

10.10 Coffee break

B5.5 10.50 Modelling potentials, concentrations and current densities in three-dimensional electrodes for metal recovery from dilute liquid effluents. ***C.-Y. Cheng, G. H. Kelsall** (Imperial Coll. London, UK) [1443]

B5.6 11.10 Effect of stirring on the performance of electro-coagulation and electro-floitation for the removal of dyes from textile wastewater. **L. Szpyrkowicz** (Univ. Venice, IT) [228]

B5.7 11.30 The electrochemical reduction of nitrate on copper - zinc alloys in weakly alkaline solution. **Z. Mácová, *K. Bouzek** (Inst. Chem. Technol., Praha, CZ) [1147]

B5.8 11.50 Engineering technologies of electroless nickel process. **A. E.-M. Reda Gad** (Nat. Res. Cent., Cairo, EG) [177]

B6 Lectures – Wednesday afternoon Symposium on electrochemical engineering

Chairpersons: **F. Lapique, J. Hivěš**

B6.1 14.00 Keynote lecture: Preparation and characterisation of Pt deposition on ion conducting membrane for making electrodes in the direct methanol fuel cell. **M. Shen, S. Roy, *K. Scott, E. Yu** (Univ. Newcastle, UK) [1049]

B6.2 14.40 A study of PtRu catalysts formed on Ti support by thermal decomposition for methanol oxidation. **L. X. Yang, *R. G. Allen, K. Scott, P. Christenson, S. Roy** (Univ. Newcastle, UK) [1047]

B6.3 15.00 Electrocatalytic properties of a mixed Pt-polyppyrol catalyst for the anodic methanol oxidation. ***K. Jüttner, K. Bouzek¹, M. Lange, S. Moravcová¹** (Karl-Winnacker-Inst., Frankfurt/M., DE; ¹Inst. Chem. Technol., Praha, CZ) [1217]

15.20 Coffee break, poster session

B6.4 16.00 Nafion - Polypyrrole composite as a novel material for PEM fuel cell. **S. Moravcová, P. Holzhauser, *K. Bouzek, K. Jüttner¹** (Inst. Chem. Technol., Praha, CZ; ¹Karl-Winnacker-Inst., Frankfurt/M., DE) [969]

B6.5 16.20 Modeling and engineering of PEM fuel cell. ***V. N. Fateev, S. A. Grigoriev, A. A. Kalinnikov, V. I. Poremsky, S. V. Ostrovsky, F. N. Pekhota** (Kurchatov Inst., Moskva, RU) [309]

B6.6 16.40 Macro-scale modelling of PEM fuel cells. ***L. Bletzacker, M. Prat, M. Quintard** (Inst. Mech. Fluids, Toulouse, FR) [622]

B6.7 17.00 A pseudo-homogeneous model for catalyst layer of PEM fuel cell. **T. Eshagh Nimvar, *S. Rowshanzamir¹, M. Khoshnoodi, M. H. Eikani²** (Univ. Sistan&Baluchestan, Zahedan, IR; ¹Iran Univ. Sci. Technol., Tehran, IR; ²IROST, Tehran, IR) [451]

B7 Lectures – Thursday morning Symposium on electrochemical engineering

Chairpersons: **K. Juttner, K. Bouzek**

B7.1 8.30 Keynote lecture: Photovoltaics and electrochemistry - problems in development and design of disinfection apparatuses. **H. Bergmann** (Anhalt Univ. Appl. Sci., Koethen, DE) [113]

B7.2 9.10 Development of Ir-based anode catalytic layer for water electrolysis with polymer electrolyte membrane. ***M. Tsyplin, A. Marshall, B. Borresen, G. Hagen, R. Tunold** (NTNU, Trondheim, NO) [531]

B7.3 9.30 Conversion and selectivity behaviour of an electrochemical membrane process. ***Y. Ye, L. Rihko-Struckmann, B. Munder, K. Sundmacher¹** (Max Planck Inst. Dyn. Compl. Tech. Syst., Magdeburg, DE; ¹O. von Guericke Univ., Magdeburg, DE) [227]

B7.4 9.50 Instabilities and pattern formation in high temperature fuel cells. ***M. Mangold, M. Krasnik, K. Sundmacher¹** (Max-Planck-Inst. Dyn. Kompl. Tech. Syst., Magdeburg, DE; ¹O. v Guericke Univ., Magdeburg, DE) [605]

10.10 Coffee break

B7.5 10.50 Effective diffusivity measurements of binary gaseous mixtures with relevance to solid oxide fuel cell anode operation. A new proposed method for the interpretation of diffusion data. ***C. Kalyvas, N. Brandon, R. Collins¹** (Imp. Coll. London, UK; ¹Rolls-Royce Fuel Cell Systems, Derby, UK) [1629]

B7.6 11.10 Modelling the corrosion of aluminium in presence of small particles of carbon in a water - polyethylene glycol (PEG) mixture. ***J.-P. Caire, F. Dalard** (INPG, Saint-Martin d'Heres, FR) [273]

B7.7 11.30 Behaviour of sulphur in aluminium cells - electrochemical reactions. ***J. Hivěš, M. Ambrová, P. Fellner** (Slovak Univ. Technol., Bratislava, SK) [87]

B7.8 11.50 Electrical conductivity of low-melting electrolytes. ***J. Hivěš, J. Thonstad¹** (Slovak Univ. Technol., Bratislava, SK; ¹Norwegian Univ. Sci. Technol., Trondheim, NO) [55]

C

C1 Lectures – Monday morning Absorption and distillation

Chairpersons: **A. Khelassi, V. Jiřičný**

C1.1 8.30 Control system design for distillation columns using artificial intelligence. ***A. Khelassi, A. Maldi, R. Bendib, J. A. Wilson¹** (Univ. Boumerdes, DZ; ¹Univ. Nottingham, UK) [1016]

C1.2 8.50 Alpha-olefin separation from olefin isomers by reactive extractive distillation: effects of ligand structure. ***A. E. Wentink, J. Conde, N. J. M. Kuipers, A. B. de Haan, J. Scholtz¹, H. Mulder¹** (Univ. Twente, Enschede, NL; ¹Sasol Technology, Sasolburg, ZA) [940]

C1.3 9.10 Desorption under vacuum in packed towers of H₂S-NH₃-CO₂-solutions containing sodium hydroxide. ***R. Thiele, J.-U. Repke, R. Faber, H. Thielert¹, G. Wozny** (Tech. Univ., Berlin, DE; ¹Thyssen Krupp EnCoke, Bochum, DE) [94]

C1.4 9.30 Revamp of C3-splitter for higher capacity and product purity. **J. Jelinek** (Koch-Glitsch, Brno, CZ) [70]

9.50 Coffee break, plenary lecture

C1.5 11.10 Batch extractive distillation as a hybrid process: separation of azeotropes of minimum boiling point. **B. Kotai, P. Lang, G. Modla** (Univ. Technol. Econ., Budapest, HU) [784]

C1.6 11.30 Batch heteroazeotropic rectification under continuous and mixed entrainer feeding. **B. Kotai, P. Lang, G. Modla** (Univ. Technol. Econ., Budapest, HU) [785]

C1.7 11.50 Comparing different batch distillation column configurations: conventional, inverse, with a middle vessel and multivessel. **S. Cesur, B. Kūçūkkural** (Ege Univ., Izmir, TR) [142]

C2 Lectures – Monday afternoon Absorption and distillation

Chairpersons: **J. Jelinek, V. Staněk**

C2.1 14.00 Multivessel batch distillation: experimental investigations with respect to industrial applications. **G. Fieg, T. Kapala¹, S. Gruetzmann** (Tech. Univ., Hamburg, DE; ¹Cognis, Düsseldorf, DE) [131]

C2.2 14.20 Synthesis of heterogeneous distillation sequences: general procedure and case studies. **A. S. Moussa, L. Jiménez-Esteller** (Univ. Rovira Vigili, Tarragona, ES) [1376]

C2.3 14.40 Determination of partial mass transfer coefficients from concentration profiles in a distillation column. **E. Prokopová, F. J. Rejl, V. Linek, T. Moucha** (Inst. Chem. Technol., Praha, CZ) [1252]

C2.4 15.00 Experimental study on mass transfer mechanism in gas-liquid dispersions. **M. Kordac, V. Linek, T. Moucha** (Inst. Chem. Technol., Praha, CZ) [946]

15.20 Coffee break, poster session

C2.5 16.00 New perspectives for designing reactive distillation processes. **C. A. Sánchez, C. A. Cardona** (Nat. Univ. Colomb. Manizales, CO) [656]

C2.6 16.20 An efficient adsorptive transport method for pollutant removal from aqueous streams. **F. Al-Mubaddel** (King Saud Univ., Riyadh, SA) [1681]

C2.7 16.40 Dividing wall column - a new challenge for separation systems. **I. Ivescu, D. C. Popescu¹, C. Dobre, I. Grozeanu¹, R. Isopescu²** (PETROM, Bucuresti, RO; ¹PETROM, Ploiesti, RO; ²Univ. Politehnica, Bucuresti, RO) [327]

C3 Lectures – Tuesday morning Absorption and distillation

Chairpersons: **S. Tronci, V. Staněk**

C3.1 8.30 State estimation of a distillation column through a grey model-based geometric observer. **S. Tronci, A. Frau, F. Bezzo¹, M. Barolo¹, R. Baratti** (Univ. Cagliari, IT; ¹Univ. Padova, IT) [819]

C3.2 8.50 Hydrodynamic behaviour of counter-current bubble bed and packed bed in series. **J. Ondráček, V. Jiříčný** (Inst. Chem. Proc. Fundam., Praha, CZ) [303]

C3.3 9.10 Experimental observation and model description of overshoot phenomena in the countercurrent packed bed column near the flooding point. **V. Staněk, P. Svoboda¹** (Inst. Chem. Proc. Fundam., Praha, CZ) [297]

C3.4 9.30 Feasibility analysis and design of reactive distillation processes involving vapour phase chemical reactions. **B. Belaisaoui, R. Thery, X. Meyer, M. Meyer, V. Gerbaud, X. Joula** (IGC CNRS, Toulouse, FR) [1408]

9.50 Coffee break, plenary lecture

C3.5 11.10 The qualitative and numerical analysis of the periodical regimes in the counter-current chemical reactors. **T. A. Akramov, L. R. Nazmutdinova, V. Staněk¹** (BSU, Ufa, RU; ¹Inst. Chem. Proc. Fundam., Praha, CZ) [1463]

C3.6 11.30 Optimization of fractionation units using column targeting approach (CTA). **H. E. Al-Fadala, B. K. Abdalla, B. Mohammad** (Univ. Qatar, Doha, QA) [1327]

C3.7 11.50 Experimental measure of the mass transfer coefficient into a liquid falling film with film promoter. **V. A. L. Colán, W. M. Salvagnini, M. E. S. Taqueda** (Univ. Sao Paulo, BR) [295]

C4 Lectures – Tuesday afternoon Filtration and crystallization

Filtration

Chairperson: **J. Pridal**

C4.1 14.00 Filtration and flow properties of compressed fine limestone filter cakes. **T. Mladenchev, J. Tomas** (O. v. Guericke Univ., Magdeburg, DE) [799]

C4.2 14.20 Mechanical dewatering of residual sludge: Mathematical model and numerical simulation. **D. Mihoubi, J. Vaxelaire¹, F. Zagrouba, A. Bellagi²** (INRST, Hammam-Lif, TN; ¹ENSGTI, Pau, FR; ²Ec. Nat. Ing., Monastir, TN) [134]

C4.3 14.40 The influence of filter regeneration on the internal particle rearrangement of nonwovens for cleanable dust filters. **G. Mauschitz, W. Koschutnig, W. Hoeflinger** (Vienna Univ. Technol., Wien, AT) [829]

C4.4 15.00 Pulse jet cleaning of rigid filters in gas applications - Experimental investigation and process modelling. **I. Schildermans, J. Baeyens** (Univ. Antwerpen, BE) [20]

C4.5 15.20 A parametric study of pressure drop in non-isothermal Venturi type scrubbers. **A. Rahimi, S. Aghamiri** (Isfahan Univ., IR) [1278]

15.40 Coffee break, poster session

Crystallization

Chairperson: **S. Nouri Khorasani**

C4.6 16.00 Application of freezing crystallization phenomena in wastewater treatment: an economic option for the removal of a wide variety of compounds. **A. Rodriguez, Y. Aurelle** (INSA, Toulouse, FR) [1077]

C4.7 16.20 Influences of type of seeds on product crystal size of manganese sulphate monohydrate in salting out batch crystallisation. **P. Safaeefar, M. Ang, M. Tade, M. Reyhani** (Curtin Univ. Technol., Perth, AU) [802]

C4.8 16.40 Surface topography of KDP crystal with dye additive. **Y. Asakuma, E. Ukita, K. Maeda, K. Fukui** (Univ. Hyogo, Himeji, JP) [1100]

C4.9 17.00 Control of polymorphism in crystallization of pharmaceuticals. **M. Kitamura, M. Sugimoto** (Hiroshima Univ., JP) [1255]

C4.10 17.20 Crystallization process for recovery of fluoride from industrial wastewaters. **R. Aldaco, A. Irabien** (Univ. Cantabria, Santander, ES) [1017]

C5 Lectures – Wednesday morning

Membrane processes

Chairpersons: **S. Schlosser, Z. Pientka**

C5.1 8.30 A macrohomogeneous approach to the modelling of the mass transfer through the ion selective membrane under industrial brine electrolysis conditions. **V. Fila, *K. Bouzek** (Inst. Chem. Technol., Praha, CZ) [964]

C5.2 8.50 Using energy-exergy analysis for membrane processes desalination plants. **H. Mehdizadeh** (Univ. Quatar, Doha, QA) [1264]

C5.3 9.10 Innovative microfiltration using sintered metal membranes. ***I. Schildermans, J. Baeyens, G. Vanhoutte¹, K. Ghesquière¹** (Univ. Antwerpen, BE; ¹Bekaert Adv. Filtration, Wevelgem, BE) [26]

C5.4 9.30 Preparation of membranes with controlled water permeability. **S. N. Dmitriev, *L. I. Kravets, V. V. Sleptsov¹, V. M. Elinson¹** (Joint Inst. Nucl. Res., Dubna, RU; ²State Aviat. Technol. Univ., Moskva, RU) [1061]

C5.5 9.50 Chitir/Chitosan-based macroporous membranes in protein and enzyme separations. ***G. Tishchenko, M. Bleha, J. Šimůnek¹, H. Bartoňová¹, B. Hodrová¹** (Inst. Macromol. Chem., Praha, CZ; ¹Inst. Anim. Physiol. Genet., Praha, CZ) [1075]

10.10 Coffee break

C5.6 10.50 Electrochemical properties of membranes made of poly(1,4-phenylene sulfide). ***V. Kudela, J. Schauer, K. Richau¹, H. Mohr¹** (Inst. Macromol. Chem., Praha, CZ; ¹KSS-Forschungszentrum, Teltow, DE) [955]

C5.7 11.10 Nickel ion-selective PVC membrane electrode based on new t-octyl calix[6]arene derivative. ***K. Belhmel, M. Benamor, R. Ludwig¹** (Univ. Bejaia, DZ; ¹Freie Univ., Berlin, DE) [112]

C5.8 11.30 Competitive transport of hydrochloric acid and zinc chloride through anion-exchange membrane. ***Z. Palatý, A. Žáková** (Univ. Pardubice, CZ) [277]

C6 Lectures – Wednesday afternoon

Membrane processes

Chairperson: **P. Mikulášek**

C6.1 14.00 Keynote lecture: Removal and enrichment of gases by novel hollow fiber facilitated transport membrane module and novel capillary tube-type gas absorber/stripper module. ***M. Teramoto, S. Kitada, S. Shimizu, N. Ohnishi, H. Matsuyama** (Kyoto Inst. Technol., JP) [993]

C6.2 14.40 Modeling of multicomponent gas and vapor permeation through rubbery membranes. ***P. Savolainen, K. I. Keskinen¹, J. Kallas²** (Neste Eng., Porvoo, FI; ¹Helsinki Univ. Technol., FI; ²Lappeenranta Univ. Technol., FI) [234]

C6.3 15.00 Biohydrogen concentrating by polymeric membranes. ***Z. Pientka, K. Bélafi-Bakó¹, M. Bleha** (Inst. Macromol. Chem., Praha, CZ; ¹Res. Inst. Chem. Proc. Eng., Veszprem, HU) [1348]

15.20 Coffee break, poster session

C6.4 16.00 Mass transfer investigation of liquid membrane transport of gold (III) by methyl iso-butyl ketone mobile carrier. **A. Kargari, *T. Kaghazchi, M. Soleimani** (Amirkabir Univ. Technol., Tehran, IR) [151]

C6.5 16.20 Separation of light alkanes and CO₂ in tubular silicalite-1 membrane. ***V. Fila, P. Skleničková, B. Bernauer, J. C. Pires¹, O. Pachtová², S. Miachon³, M. Kočířík²** (Inst. Chem. Technol., Praha, CZ; ¹Univ. Porto, PT; ²J. Heyrovský Inst. Phys. Chem., Praha, CZ; ³Inst. Rech. Catal., Villeurbanne, FR) [1268]

C6.6 16.40 Simulation of simultaneous membrane based solvent extraction and stripping of phenylalanine in hollow fiber contactors. **R. Kertész, *Š. Schlosser** (Slovak Univ. Technol., Bratislava, SK) [1297]

C6.7 17.00 Mass transfer of Zn²⁺ in rigid surface pore type membranes. ***C. Huber, R. Marr, M. Siebenhofer¹** (Univ. Technol. Graz, AT; ¹VTU Eng. GmbH, Grambach, AT) [395]

C7 Lectures – Thursday morning

Symposium on supercritical fluids

Chairperson: **D. U. Skala**

C7.1 8.30 Keynote lecture: Supercritical fluid techniques for production of micron and submicron particles. ***T. Gamse, F. Miguel Rodríguez¹, M. J. Cocero¹** (Graz Univ. Technol., AT; ¹Univ. Valladolid, ES) [323]

C7.2 9.10 Co-precipitation of lycopene by continuous supercritical antisolvent process. ***F. Miguel Rodríguez, M. J. Cocero Alonso, T. Gamse¹** (Valladolid, ES; ¹Univ. Technol. Graz, DE) [490]

C7.3 9.30 Nano-particles formation for pigment red 177 via a continuous supercritical anti-solvent process. **H. T. Wu, M. J. Lee, *H. M. Lin** (Nat. Taiwan Univ., Taipei, TW) [1298]

C7.4 9.50 Criteria for drugs processability by supercritical antisolvent micronization. ***R. Adami, E. Reverchon¹, E. Járvenpää, R. Huopalahti** (Univ. Turku, FI; ¹Univ. Salerno, Fisciano, IT) [1434]

10.10 Coffee break

C7.5 10.50 Separation of isopropanol from aqueous solutions by supercritical carbon dioxide extraction. ***K. Nagahama, W. Guo Ma, S. Kato** (Tokyo Metrop. Univ., JP) [366]

C7.6 11.10 Cellulase catalyzed hydrolysis of carboxymethyl cellulose at atmospheric pressure and in SC CO₂. ***M. Habulin, M. Primožič, Ž. Knez** (Univ. Maribor, SI) [390]

C7.7 11.30 Esterification of acetic acid with methanol in compressed carbon dioxide. ***S. Schwinghammer, R. Marr, M. Siebenhofer¹** (Univ. Technol., Graz, AT; ¹VTU Eng. GmbH, Grambach/Graz, AT) [392]

C8 Lectures – Thursday afternoon

Symposium on supercritical fluids

Chairperson: **T. Gamse**

C8.1 14.00 Keynote lecture: Supercritical fluids in the formation of polymeric foams. **T. Lindt** (Univ. Pittsburgh, US) [1392]

C8.2 14.40 Gas assisted mechanical extraction of cocoa butter from cocoa nibs. ***M. J. Venter, N. J. M. Kuipers, A. B. de Haan** (Univ. Twente, Enschede, NL) [95]

C8.3 15.00 Vacuum and supercritical fractionation of the essential oil of *Juniperus communis* L. and analysis of different fractions behavior against some bacteria, yeasts and fungus. **S. Glisic, S. Milojevic¹, S. Bacic, S. Dimitrijevic-Brankovic, A. M. Orlovic, *D. U. Skala** (Fac. Technol. Metall., Beograd, YU; ¹Fac. Tech. Sci., Kosovska Mitrovica, YU) [1146]

15.20 Coffee break, poster session

C8.4 16.00 Mathematical modelling of lamiaceae family extraction by supercritical carbon dioxide. **I. Zizovic, M. Stamenic, *A. M. Orlovic, D. U. Skala** (Fac. Technol. Metall., Beograd, YU) [212]

C8.5 16.20 The supercritical extraction of gingerol from fresh ginger: experiments and modeling. ***S. Balachandran, R. Mawson, S. Kentish** (Univ. Melbourne, AU) [239]

C8.6 16.40 Solute-solute and solute-matrix interactions in the SFE from plants. ***H. Sovová, M. Šajfrtová, L. Opletal¹, M. Bártlová** (Inst. Chem. Proc. Fundam., Praha, CZ; ¹Charles Univ., Hradec Králové, CZ) [367]

D

D1 Lectures – Monday morning Phase equilibria and fluid properties

Chairpersons: P. Ungerer, K. Aim

D1.1 8.30 Calculations of homogeneous azeotropes for binary and ternary fluid mixtures with the aid of the hole lattice quasicheical equation of state. **A. M. Chudakov, A. G. Morachevsky, *I. V. Prikhodko, L. I. Reshetova, A. I. Victorov, I. V. Vinogradova** (St. Petersburg State Univ., RU) [892]

D1.2 8.50 Keynote lecture: Molecular-level simulations of reacting systems in bulk and confinement. ***M. Lisař, W. R. Smith¹, J. K. Breannan²** (Inst. Chem. Proc. Fundam., Praha, CZ; ¹Univ. Ontario, Oshawa ON, CA; ²US Army Res. Lab., Aberdeen Proving Ground MD, US) [988]

D1.3 9.30 Study of the phase diagram types and p-rho-T behavior in CO₂ + n-alkane systems using PC-SAFT. **J. Garcia, L. Lugo¹, *J. Fernández¹** (Univ. Vigo, ES; ¹Univ. Santiago de Compostela, ES) [1430]

9.50 Coffee break, plenary lecture

D1.4 11.10 Improved intermolecular potential energy model for phase equilibrium predictions involving organic compounds. ***P. Ungerer, G. Ahunbay¹, O. Contreras-Camacho, V. Lachet, A. Boutin¹, P. Pascual¹** (Inst. Fr. Petrol., Rueil-Malmaison, FR; ¹CNRS, Orsay, FR) [1194]

D1.5 11.30 HSE Conformal Solution Theory: Prediction of isobaric vapour liquid-equilibrium data of binary systems of butyl chlorides with heptane, cyclohexane and toluene at 101.3, 80.0 and 53.3 kPa. **M. Hidouche, *O. Dahmani** (USTHB, Bab Ezzouar, DZ) [832]

D1.6 11.50 Low-pressure vapour-liquid data reduction using only equilibrium composition data. ***W. W. Focke, M. Grobler** (Univ. Pretoria, ZA) [1612]

D1.7 12.10 Study of phase behavior of VLE and LLE for binary polymer solutions using a new free-volume model based on the Guggenheim theory. **H.-R. Radfarnia, *V. Taghikhani, C. Ghotbi** (Sharif Univ. Technol., Tehran, IR) [734]

D1.8 12.30 VLE calculation for ternary and quaternary mixtures of associating fluids. ***S. Aghamiri, H. Modarress¹, G. A. Mansoori²** (Univ. Isfahan, IR; ¹Univ. Amir-Kabir, Tehran, IR; ²Univ. Illinois, Chicago IL, US) [1051]

D2 Lectures – Monday afternoon Phase equilibria and fluid properties

Chairpersons: G. Sadowski, I. Wichterle

D2.1 14.00 Vapor-liquid equilibria of hydrocarbon and non-hydrocarbon mixtures using the PC-SAFT equation of state. ***F. García-Sánchez, D. V. Nichita** (Inst. Mex. Pet., Mexico, MX) [776]

D2.2 14.20 Keynote lecture: Thermodynamics of polymer systems. **G. Sadowski** (Univ. Dortmund, DE) [882]

D2.3 15.00 Group-contribution methods for estimating the properties of polymer systems. **G. Bogdanic** (INA-Industrija Naft, Zagreb, HR) [350]

15.20 Coffee break, poster session

D2.4 15.40 Fluid-phase equilibria in alkanol + carbon dioxide systems: supplemented database and molecular-based equation of state modeling. ***K. V. Aim, A. Babič, I. Nezbeda, L. Viček** (Inst. Chem. Proc. Fundam., Praha, AL) [1496]

D2.5 16.00 The four-equation flash. **D. V. Nichita** (Inst. Mex. Pet., Mexico, MX) [757]

D2.6 16.20 A consistent C₆₊ distribution for generation of natural gas phase envelope. ***M. Moshfeghian, R. N. Maddox¹, A. H. Johannes¹** (Kuwait Inst. Sci. Res., Safat, KW; ¹Oklahoma State Univ., Stillwater OK, US) [1289]

D2.7 16.40 Phase envelope construction for mixtures with many components. **D. V. Nichita** (Inst. Mex. Pet., Mexico, MX) [674]

D2.8 17.00 Stability analysis of phase diagrams and tests of thermodynamic data on multicomponent systems. **A. M. Toikka** (St. Petersburg State Univ., RU) [724]

D2.9 17.20 Correlation of the experimental data for LLE of PEG + DEX + water mixtures using a modified UNIQUAC-NRF model. **H.-R. Radfarnia, *C. Ghotbi, V. Taghikhani** (Sharif Univ. Technol., Tehran, IR) [505]

D3 Lectures – Tuesday morning Phase equilibria and fluid properties

Chairpersons: D. V. Nichita, J. Linek

D3.1 8.30 Estimation of enthalpy and entropy of vaporization and of liquid heat capacity by a group contribution method. ***Z. Kolská, M. Zábanský¹, V. Růžička¹, R. Gani²** (J. E. Purkyně Univ., Ústí n/L., CZ; ¹Inst. Chem. Technol., Praha, CZ; ²Tech. Univ. Denmark, Lyngby, DK) [1564]

D3.3 8.50 Solubility of CO₂ in aqueous solutions of N-methyldiethanolamine using the modified Kent-Eisenberg model. **N. Seyed Matin, *M. Vahidi, M. J. Hosseini, M. Goharrokhi¹** (Res. Inst. Pet. Ind., Tehran, IR; ¹Islamic Azad Univ., Tehran, IR) [722]

D3.4 9.10 Liquid-liquid equilibria in ternary systems isopentane + tert-butanol + water and n-pentane + tert-butanol + water at 293.15 K. ***Z. Rečková, K. Řehák,**

P. Uusi-Kyyny¹, J.-P. Pokki¹, J. Aittamaa¹ (Inst. Chem. Technol., Praha, CZ; ¹Helsinki Univ. Technol., FI) [620]

D3.5 9.30 High-pressure vapor-liquid equilibria in the nitrogen-n-heptane system. *F. García-Sánchez, G. Eliosa-Jiménez, G. Silva-Oliver (Inst. Mex. Petrol., Mexico, MX) [585]

9.50 Coffee break, plenary lecture

D3.6 11.10 Non-dimensional model for vaporization enthalpy of organic compounds. *J. Kukul, Z. Kolská¹ (Inst. Chem. Technol., Praha, CZ; ¹J. E. Purkyně Univ., Usti/L, CZ) [1498]

D3.7 11.30 Improved correlations for predicting the viscosity of Iran crude oils. M. Eftekhari, *M. Taghizadeh, H. Naderi¹, A. Eliassi² (Mazandaran Univ., Babol, IR; ¹RIPi, Tehran, IR; ²IROST, Tehran, IR) [1090]

D3.8 11.50 Liquidus projection of the quaternary Sn-Ag-Cu-Ni system and the alloy's phase formation sequence during solidification. *S.-W. Chen, C.-A. Chang, M. Gueguen¹ (Nat. Tsing Hua Univ., Hsin-Chu, TW; ¹Ec. Polytech. Univ., Nantes, FR) [621]

D4 Lectures – Tuesday afternoon

Adsorption and ion exchange

Chairperson: B. Bernauer

D4.1 14.00 Reverse flow adsorption for the recovery of homogeneous catalysts: determination of adsorption kinetics by the zero length column method. *J. Dunnewijk, H. Bosch, A. B. de Haan (Univ. Twente, Enschede, NL) [706]

D4.2 14.20 Removal of trace metals and organic micropollutants from water. *Chingombe, Saha, R. J. Wakeman (Loughborough Univ., UK) [1300]

D4.3 14.40 Chromium removal by ion exchange: Analysis of the regeneration step. *M. J. Rivero, I. Ortiz (Univ. Cantabria, Santander, ES) [514]

D4.4 15.00 Development of separation process of tetra-methyl ammonium hydroxide using ion exchange resin. J. Shibata, T. Yanase, *N. Murayama, H. Yamamoto (Kansai Univ., Osaka, JP) [1310]

15.20 Coffee break, poster session

D4.5 16.00 Hydrophobic contribution of amino acids in peptides. *C. I. Liu, P. H. Lin, B. F. Lee, R. C. Ruaan¹ (Chung-Yuan Univ., Chung-Li, TW; ¹Nat. Cent. Univ., Chung-Li, TW) [1367]

D4.6 16.20 Phase equilibria and diffusion studies of polymer-solvent systems utilizing inverse gas chromatography. *J. L. Duda, P. K. Davis¹, R. P. Danner (Pennsyl. State Univ., University Park PA, US; ¹GE Global Res., Niskayuna NY, US) [1287]

D4.7 16.40 Experimental and theoretical determination of adsorption isotherms for non-ideal VOC mixtures. *N. Fernandes, S. Sochard, P. Mocho, F. Broto, J.-P. Dumas (Univ. Pau, Tarbes, FR) [561]

D4.8 17.00 Bioprocess scale-up: development of advances techniques and equipment for the separation of mixtures proteins using IMAC. *E. M. Del Valle, R. Gutierrez, C. Ruiz, M. A. Galan (Univ. Salamanca, ES) [1303]

D4.9 17.20 Screening of new sorbent materials for acid dyes removal from aqueous solutions. *H. Benaissa, M. A. Attar (Univ. Tlemcen, DZ) [1306]

D5 Lectures – Wednesday morning

Extraction

Chairperson: A. Spasic

D5.1 8.30 Classification of rigid and deformable interfaces in finely dispersed systems: Micro-, Nano- and Atto-Engineering. *A. M. Spasic, M. D. Babic, M. M. Marinko, N. N. Djokovic, M. M. Mitrovic¹, D. N. Krstic¹ (Inst. Technol. Nucl. Min. Raw Mat., Beograd, YU; ¹Fac. Technol. Metall., Univ. Belgrade, Beograd, YU) [22]

D5.2 8.50 Droplet hydrodynamics in a Kühni-miniplant extraction column. *T. Steinmetz, H.-J. Bart (Univ. Kaiserslautern, DE) [146]

D5.3 9.10 A mass transfer coefficient model for low interfacial tension extraction systems. *J. Saen, M. H. Barani (Univ. Bu-Ali Sina, Hamadan, IR) [444]

D5.4 9.30 Theory of electroviscoelasticity: fractional approach. *A. M. Spasic, M. P. Lazarevic¹ (Inst. Technol. Nucl. Min. Raw Mat., Beograd, YU; ¹Fac. Mech. Eng., Univ. Belgrade, Beograd, YU) [36]

D5.5 9.50 Single drop mass transfer variation in contaminated liquid-liquid extraction. *J. Saein, M. Riaziakhan, S. N. Ashrafizadeh¹ (Univ. Bu Ali-Sina, Hamadan, IR; ¹Iran Univ. Sci. Technol., Tehran, IR) [718]

10.10 Coffee break

D5.6 10.50 Hydraulic characteristics of caprolactam extraction in the Bateman Pulsed Column. *M. L. van Delden, N. J. M. Kuipers, A. B. de Haan, O. Lerner¹ (Univ. Twente, Enschede, NL; ¹Bateman Solvent Extraction, Yokneam, IL) [586]

D5.7 11.10 Study and simulation of transfer phenomena in a pulsed liquid-liquid extraction column using image analysis. *M. Moscosa Santillan, C. Vanance, P. Ye, J. Amouroux (UPMC/ENSCP, Paris, FR) [730]

D5.8 11.30 The measurement of floc size and flocculation kinetics by the laser knife and digital camera. *B. Kysela, P. Ditl (Czech Tech. Univ., Praha, CZ) [881]

D5.9 11.50 A new pulsation policy in pulsed column applied to solid-liquid extraction. R. Wongkittipong, *L. Brunet¹, L. Prat¹, C. Gourdon¹, G. Casamatta¹, S. Damronglerd (Chulalongkorn Univ., Bangkok, TH; ¹LGC CNRS, Toulouse, FR) [1317]

D6 Lectures – Wednesday afternoon

Extraction

Chairperson: P. Ditl

D6.1 14.00 Selection of ionic liquids for the extraction of aromatic hydrocarbons from aromatic/aliphatic mixtures. *G. W. Meindersma, J. G. Podt, M. B. Klaren, A. B. de Haan (Univ. Twente, Enschede, NL) [51]

D6.2 14.20 Diluent effects in amine extraction of sulfuric acid. *J. Procházka, A. Heyberger, E. Volaufová (Inst. Chem. Proc. Fundam., Praha, CZ) [164]

D6.3 14.40 Counter-current extraction of natural products using the VIXEX(TM) technology. I. A.-M. Godwin (CSIR Bio/Chemtek, Modderfontein, ZA) [325]

D6.4 15.00 Mathematical modeling of continuous enzyme extraction by aqueous two-phase system. D. Maretic, S. Bogdan¹, D. Vasic-Racki, *B. Zelic (Univ. Zagreb, HR; ¹Pliva, Zagreb, HR) [385]

15.20 Coffee break, poster session

D6.5 16.00 Development and optimisation of an enantioselective extractant for chiral separation of amino-alcohols by reactive extraction. ***M. Steensma, N. J. M. Kuipers, A. B. de Haan, G. Kwant**¹ (Univ. Twente, Enschede, NL; ¹DSM Res., Geleen, NL) [526]

D6.6 16.20 Isolation of active ingredients from green tea (Fanning Belas, China). ***A. Perva-Uzunalic, M. Škerget, Ž. Knez** (Univ. Maribor, SI) [611]

D6.7 16.40 Separation and recovery of acids from waste acid mixture containing phosphoric, nitric and acetic acids with solvent extraction. ***J. Shibata, K. Ohata, N. Murayama, H. Yamamoto** (Kansai Univ., Osaka, JP) [1309]

D7 Lectures – Thursday morning Symposium on micro- and mesoporous materials

Chairperson: P. Hudec

D7.1 8.30 Keynote lecture: Adsorption and transport in micro- and mesoporous materials. **F. J. Keil** (Hamburg Univ. Technol., DE) [966]

D7.2 9.10 Characterization of pore structure of kaolin modified by reaction with sulfuric acid at high temperature. **F. G. Colina, *I. Caballero, J. Costa** (Univ. Barcelona, ES) [287]

D7.3 9.30 Permeability of grain boundaries in well defined silicalite-1 polycrystalline layers and single crystals. ***L. Brabec, A. Zikánová, M. Kočířik** (J. Heyrovsky Inst. Phys. Chem., Praha, CZ) [1468]

D7.4 9.50 Pore-size distribution from liquid expulsion permporometry. ***O. Šolcová, P. Schneider** (Inst. Chem. Proc. Fundam., Praha, CZ) [679]

10.10 Coffee break

D7.5 10.50 Effect of non-zeolitic pores on the transport of species through silicalite-1 membranes. **A. Zikánová, M. Kočířik, *P. Hrabánek¹, B. Bernauer¹** (Heyrovsky Inst. Phys. Chem., Praha, CZ; ¹Inst. Chem. Technol., Praha, CZ) [1476]

D7.6 11.10 Nanotechnology for industrial catalysts. **N. Pernicone** (Catalyst Consultant, Novara, IT) [1676]

D7.7 11.30 Prediction of adsorption properties of hydrocarbons and polar compounds in zeolites by Monte Carlo simulation. **P. Pascual, O. Contreras-Camacho¹, A. Boutin, *P. Ungerer¹, J.-P. Bellat², S. Limborg-Noetinger¹, M. Thomas¹** (CNRS, Orsay, FR; ¹Inst. Fr. Petrol, Rueil-Malmaison, FR; ²CNRS, Dijon, FR) [1196]

D7.8 11.50 Thermodynamic study of moisture sorption/desorption in clay. ***S. Chemkhi, F. Zagrouba, W. Jomaa¹, J. R. Puiggali¹, A. Bellagi²** (INRS, Hammam Lif, TN; ¹ENSAM, Talence, FR; ²ENIM, Monastir, TN) [82]

D7.9 12.10 Adsorption of tannin from pomegranate juice. **A. A. Safekordi** (Azad Univ., Tehran, IR) [456]

D7.10 12.30 Development of porous structure of activated carbons from Turkish lignite with different chemical reagents. ***F. Karacan, S. Karacan¹** (Gen. Dir. Min. Res. Expl., Ankara, TR; ¹Ankara Univ., TR) [1596]

D8 Lectures – Thursday afternoon Symposium on micro- and mesoporous materials

Chairperson: F. Keil

D8.1 14.00 Highly porous tin oxide nanowires. **K.-H. Wu, *S.-Y. Lu** (Nat. Tsing-Hua Univ., Hsin-Chu, TW) [97]

D8.2 14.20 Synthesis and characterization of ordered mesoporous silica materials. ***A. Derylo-Marczewska, A. W. Marczewski, I. Skrzypek** (M. Curie-Skłodowska Univ., Lublin, PL) [739]

D8.3 14.40 MCM-41 template removal studied by positron annihilation lifetime spectroscopy. ***R. Zaleski, J. Wawrzyszczuk, A. Borowka** (M. Curie Skłodowska Univ., Lublin, PL) [399]

D8.4 15.00 Preparation of high dense Alumina-Toughened Zirconia (ATZ) nanocomposites from highly fluid slips by colloidal processing. ***H. Sarraf, J. Havrda** (Inst. Chem. Technol., Praha, CZ) [1233]

15.20 Coffee break, poster session

D8.5 16.00 Development of inorganic supports suited for microporous layer deposition - synthesis and characterization. **K. Juristová, *V. Fila, J. Andertová, A. Zikánová¹, B. Bernauer, M. Lhotka** (Inst. Chem. Technol., Praha, CZ; ¹J. Heyrovsky Inst. Phys. Chem., Praha, CZ) [1266]

D8.6 16.20 Porous polymeric nanoparticles as water purification systems. **O. Kammona, E. Dini, *C. Kiparissides** (Aristotle Univ., Thessaloniki, GR) [1355]

D8.7 16.40 Microactivity-tests of FCC catalyst modified with ZSM-5 zeolites. ***P. Hudec, R. Tóth, A. Smiešková** (Slovak Univ. Technol., Bratislava, SK) [1225]

D8.8 17.00 A dynamic study for adsorption of NOx on Pt, Pd-ZSM-5 coated monolithic catalyst. ***G. Özkan, K. Kaya, G. Özkan** (Gazi Univ., Ankara, TR) [875]

D8.9 17.20 Removal of Cr(VI) by the adsorbents produced from coffee residues. ***M. Mahramanlioglu, K. Güçlü, I. Kizilcikli, T. Misirli** (Istanbul Univ., Avclar, TR) [1044]

E

E1 Lectures – Monday morning Symposium on multi-scale aspects of bubbly flows

Chairpersons: A. Biesheuvel, G. M. Evans

E1.1 8.30 Keynote lecture: Vorticity and bubbly flows. **A. Biesheuvel** (Univ. Twente, Enschede, NL) [1072]

E1.2 9.10 Large scale vortical structures in bubble columns for gas fractions in the range of 5%-25%. ***W. K. Hartevelde, J. E. Julia¹, R. F. Mudde, H. E. A. van den Akker** (Delft Univ. Technol., NL; ¹Univ. Jaume, Castello de la Plana, ES) [394]

E3 Lectures – Tuesday morning Fluid flow and multiphase systems

E1.3 9.30 Coupling mechanisms between coherent structures and micro-particles in turbulent boundary layer. **M. Picciotto, C. Marchioli, *A. Soldati** (Univ. Udine, IT) [1151]

9.50 Coffee break, plenary lecture

E1.4 11.10 Keynote lecture: Flow characteristics and application of micro bubble containing bubbly two-phase flow. **A. Serizawa** (Univ. Kyoto, JP) [1271]

E1.5 11.50 Transfer mechanisms for microbubbles in turbulent boundary layer. **A. Giusti, F. Lucci, *A. Soldati** (Univ. Udine, IT) [1180]

E1.6 12.10 Passive acoustic analysis of complex bubbly flows. **R. Manasseh** (CSIRO, Melbourne, AU) [1272]

E2 Lectures – Monday afternoon Fluid flow and multiphase systems

Bubble columns

Chairpersons: A. Cartellier, A. Serizawa

E2.1 14.00 Keynote lecture: Induced agitation and the prediction of phase distributions in laminar bubbly flows. **A. Cartellier** (CNRS-INPG, Grenoble, FR) [1157]

E2.2 14.40 Profiles of gas bubble and bubble passage frequency in a bubble column. ***F. Yamashita, Y. Kohsaka** (Kanagawa Inst. Technol., Atsugi, JP) [695]

E2.3 15.00 Analysis of hydrodynamic of two phase flow in bubble column using digital image processing. **D. Zajac, *S. Anweiler, R. Ulbrich** (Tech. Univ. Opole, PL) [831]

15.20 Coffee break, poster session

E2.4 16.00 Applying drift-flux to predict the transition from bubbly to churn-turbulent flow in a plunging liquid jet bubble column. ***G. M. Evans, A. V. Nguyen, P. M. Machniewski**¹ (Univ. Newcastle, Callaghan NSW, AU; ¹Univ. Technol., Warszawa, PL) [471]

E2.5 16.20 kLa measurement by Dynamic Sulfitte Method in agitated vessel. ***A. Šifřinek, P. Dřil, V. Linek¹, M. Kordáč¹** (Czech Tech. Univ., Praha, CZ; ¹Inst. Chem. Technol., Praha, CZ) [805]

E2.6 16.40 Enhanced mass transfer rates of a novel oscillatory flow meso reactor. ***N. M. Reis, A. Vicente, J. Teixeira, M. R. Mackley¹** (Univ. Minho, Braga, PT; ¹Univ. Cambridge, UK) [553]

E2.7 17.00 Mechanism of dissolution of dispersed phase in isothermal two-phase bubble column reactor. **S. K. Majumder, *G. Kundu, D. Mukherjee** (Indian Inst. Technol., Kharagpur, IN) [630]

E2.8 17.20 Comparative study of two-phase gas non-Newtonian liquid flow in up-flow and downflow bubble column. ***A. Mandal, G. Kundu, D. Mukherjee** (IIT, Kharagpur, IN) [1592]

Multiphase CFD

Chairpersons: H. Jakobsen, M. Ruzicka

E3.1 8.30 Keynote lecture: Challenges on population balance modelling of the coalescence and breakage processes in bubble column reactors. **C. A. Dorao, *H. A. Jakobsen** (Norweg. Univ. Sci. Technol., Trondheim, NO) [1076]

E3.2 9.10 Implementation of population balance into multiphase-model in CFD simulation for bubble column. ***Z. Sha, A. Laari, I. Turunen** (Lappeenranta Univ. Technol., FI) [61]

E3.3 9.30 Numerical calculation of backmixing and mass transfer in bubble columns. ***D. Wiemann, D. Mewes** (Univ. Hannover, DE) [186]

9.50 Coffee break, plenary lecture

E3.4 11.10 CFD of bubble columns on different scales. ***M. Šimčík, M. Ruzicka, J. Drahoš, K. Wichterle¹** (Inst. Chem. Proc. Fundam., Praha, CZ; ¹Tech. Univ. Ostrava, CZ) [1658]

E3.5 11.30 The CFD simulation and an experimental study of hydrodynamic behaviour of liquid-solid flow. ***J. Křístal, V. Jiřičný, V. Staněk** (Inst. Chem. Proc. Fundam., Praha, CZ) [320]

E3.6 11.50 Investigation of dependence of gas flow on the geometry of cyclonic separators by CFD simulation. ***M. Harasek, A. Horvath, C. Jordan** (Vienna Univ. Technol., Wien, AT) [606]

E3.7 12.10 Influence of viscosity on droplet-droplet collision behaviour: experimental and numerical results. ***C. Gotaas, P. Havelka, N. Roth¹, M. Hase¹, B. Weigand¹, H. A. Jakobsen, H. F. Svendsen** (NTNU, Trondheim, NO; ¹Univ. Stuttgart, DE) [435]

E4 Lectures – Tuesday afternoon Fluid flow and multiphase systems

Interfaces

Chairpersons: R. Darton, R. Manasseh

E4.1 14.00 The investigation of liquid flows with surface tension gradients. ***R. C. Darton, C. D. Bain, C. J. Bredard** (Univ. Oxford, UK) [161]

E4.2 14.20 Experimental study of drop break-up dynamics downstream a restriction in a liquid-liquid duct flow. ***S. Galinat, C. Dalmazzone¹, C. Noik¹, O. Masbernat, P. Guiraud²** (LGC CNRS, Toulouse, FR; ¹Inst. Fr. Pet., Rueil-Malmaison, FR; ²INSA, Toulouse, FR) [1365]

E4.3 14.40 Analysis of liquid-liquid flows in horizontal pipes: state of the art and 1-D models. ***C. Conan, S. Decarre¹, O. Masbernat, A. Line²** (LGC CNRS, Toulouse, FR; ¹Inst. Fr. Pet., Rueil-Malmaison, FR; ²INSA, Toulouse, FR) [1359]

E4.4 15.00 Free falling droplet submitted to vaporization. **S. Guella, M. Marion, E. Lepinasse, *A. Saboni¹** (Univ. Caen, FR; ¹INSA Rouen, FR) [754]

15.20 Coffee break, poster session

E4.5 16.00 High-speed images of bubble formation. ***R. Bunganič, M. Ruzicka, J. Drahoš** (Inst. Chem. Proc. Fundam., Praha, CZ) [1662]

E4.6 16.20 Wall effect on bubble formation at a submerged orifice. **Z. Y. Xiao, *R. B. H. Tan** (Nat. Univ. Singapore, SG) [780]

E4.7 16.40 Monitoring of the interface movement of a bubbling dip tube by the pressure signal. ***G. Janssens-Maenhout, L. Decham** (JRC Ispra, IT) [1701]

E5 Lectures – Wednesday morning Fluid flow and multiphase systems

Multiphase systems

Chairpersons: **D. D. Joseph, A. Soldati**

E5.1 8.30 Three phase hydrodynamic behavior on airlift tanks (ALT). ***J. A. Trilleros Villaverde, R. Diaz Martín¹, P. Redondo Martín¹** (Univ. Complutense, Madrid, ES; ¹Univ. San Pablo, Madrid, ES) [768]

E5.2 8.50 Investigation of hydrodynamic parameters and modeling of an internal loop airlift reactor. ***A. Karimi, A. Tavasoli, H. R. Bakhtiary, M. R. Jafari Nasr, M. A. Khodaghali** (Res. Inst. Pet. Ind., Tehran, IR) [607]

E5.3 9.10 The study of elementary steps in the flotation process using image analysis method. ***D. Horn, P. Basařová, V. Machoň** (Inst. Chem. Technol., Praha, CZ) [764]

E5.4 9.30 Pilot plant evaluation of a novel FCC riser separator system. ***J. J. Verstraete, J.-L. Duplan, T. Gauthier** (Inst. Fr. Pet., Vernaison, FR) [675]

E5.5 9.50 Rainsplash effects on overland flow regime and on sediment concentration. ***L. Mouzai, M. Bouhadef** (USTHB, Algiers, DZ) [1140]

10.10 Coffee break

E5.6 10.50 Keynote lecture: Fluid dynamics of floating particles. **R. P. Singh, *D. D. Joseph¹** (N. Jersey Inst. Technol., Newark NJ, US; ¹Univ. Minnesota, Minneapolis MN, US) [1539]

E5.7 11.30 NMR studies of liquid, gas and solid particles flow in catalysis. ***A. V. Matveev, I. V. Koptug¹, V. M. Khanaev², L. V. Barysheva², E. S. Borisova², O. V. Chub², O. P. Klenov², A. S. Noskov²** (Novosibirsk State Univ., RU; ¹Int. Tomogr. Cent., Novosibirsk, RU; ²Boreskov Inst. Catal., Novosibirsk, RU) [200]

E5.8 11.50 Chaotic forecasting of heat-transfer coefficient for an evaporator with two-phase flow. ***M.-Y. Liu, J.-P. Xue, A.-H. Qiang** (Tianjin Univ., CN) [1706]

E6 Lectures – Wednesday afternoon Fluid flow and multiphase systems

Film flow and rheology

Chairpersons: **S. Alekseenko, O. Wein**

E6.1 14.00 Keynote lecture: Large-scale structures in impinging jets and falling films. ***S. Alekseenko, D. Markovich** (Inst. Thermophys., Novosibirsk, RU) [1401]

E6.2 14.40 Solitary waves dynamics of liquid film flows. **J. Tihon** (Inst. Chem. Proc. Fundam., Praha, CZ) [1121]

E6.3 15.00 Flow measurements of film flows down flat and structured inclines. ***I. Ausner, A. Hoffmann, J.-U. Repke, G. Wozny** (Tech. Univ., Berlin, DE) [83]

15.20 Coffee break, poster session

E6.4 16.00 Electrodiffusion flow diagnostics for liquids displaying Apparent Wall Slip. ***O. Wein, M. Vecer, V. V. Tovcigrecko, V. Sobolik¹** (Inst. Chem. Proc. Fundam., Praha, CZ) [1218]

E6.5 16.20 Principles of particle bridging by small molecules - structure and configuration. **Y. K. Leong** (James Cook Univ., Townsville, AU) [136]

E6.6 16.40 Optimization of the rheological properties of nano-sized yttria-stabilized tetragonal polycrystals zirconia slurries for aqueous slip-casting. ***H. Sarraf, J. Havrdá, R. Herbig¹** (Inst. Chem. Technol., Praha, CZ; ¹Inst. Keram. Werkstoffe, Freiberg, DE) [1195]

E6.7 17.00 Rheological behaviour of fresh and cooked fruits. **M. A. Cancela, *E. Álvarez, R. Maceiras** (Univ. Vigo, ES) [863]

E6.8 17.20 Flow of viscoelastic fluids through fixed beds of particles. ***I. Machač, H. Bendová, B. Šiška, P. Štern¹** (Univ. Pardubice, CZ; ¹Inst. Hydrodyn., Praha, CZ) [349]

E7 Lectures – Thursday morning Fluid flow and multiphase systems

Multiphase molten metal flows

Chairpersons: **M. Diaz, K. Wichterle**

E7.1 8.30 Keynote lecture: The steel converter, a stirred G-L-L multiphase flow system. **M. Martin, M. Rendueles¹, *M. Diaz** (Univ. Oviedo, ES; ¹Project Manag. Area, Oviedo, ES) [1104]

E7.2 9.10 Slag-metal mixing zone in ladle treatment. **S. Du** (Royal Inst. Technol., Stockholm, SE) [1190]

E7.3 9.30 Mixing and scale-down/scale-up studies related to the cleaning of molten aluminium. ***F. Chiti, Y. Saito¹, M. Kimata², W. Bujalski, J. M. Song, M. R. Jolly, A. W. Nienow** (Univ. Birmingham, UK; ¹Nippon Steel Corp., Futsu-City, JP; ²Yamagata Univ., Yonezawa, JP) [307]

E7.4 9.50 Injection of solids in melts - using a coherent jet. ***G. Böttcher, D. Senk¹, H.-W. Gudenau¹** (SMS Demag, Düsseldorf, DE; ¹RWTH Aachen Univ., AU) [1489]

10.10 Coffee break

E7.5 10.50 Fluid flow and movement solid particles phenomena in tundish during continuous casting steel. **A. Minayev, *A. Smirnov** (Donetsk Nat. Tech. Univ., UA) [1087]

E7.6 11.10 Turbulent enhancement of mass transfer in bubble plumes. ***F. Schaub, W. Plusckell¹** (Univ. Halle, DE; ¹Tech. Univ., Clausthal, DE) [1739]

E7.7 11.30 Modeling of gas bubble breakup in liquid steel. **K. Wichterle** (Tech. Univ. Ostrava, CZ) [1160]

E7.8 11.50 Materials and process design with glassy polymeric foams. **T. Lindt** (Univ. Pittsburgh, US) [1397]

E7.9 12.10 Unique installation and method of levitating drop for studying under gas pressure the system "metal - slag - gas". ***T. Rashev, L. Jekova, L. Saraivanov** (Inst. Metal Sci., Sofia, BG) [1713]

E7.10 12.30 Alloying of steel melts by nitrogen bubbling (at partial pressure of 10 bars). ***C. Andreev, M. Manchev, T. Rashev, L. Nenova** (Inst. Metal Sci., Sofia, BG) [1709]

F

E8 Lectures – Thursday afternoon Fluidization

Chairpersons: **J. Baeyens, C. Vanderwalle**

E8.1 14.00 Classification of particles by liquid fluidization: sorting versus sizing. **N. Epstein** (Univ. British Columbia, Vancouver BC, CA) [1068]

E8.2 14.20 Effect of rheological behaviour of the fluid on the fluidized bed structure in liquid-solid fluidization. ***B. Šiška, P. Doleček, H. Bendová, I. Macháč** (Univ. Pardubice, CZ) [849]

E8.3 14.40 Fluidization characteristics of collagen beads. **C. M. Tilara, *G. J. Maffia** (Widener Univ., Chester PA, US) [1130]

E8.4 15.00 The influence of the core-annulus flow of dilute CFB risers on the residence time distribution of the solid and gas phase. ***C. Vandewalle, J. Degreve, J. Baeyens**¹ (Kathol. Univ. Leuven, Heverlee, BE; ¹Univ. Antwerpen, BE) [34]

15.20 Coffee break, poster session

E8.5 16.00 Analysis of gas-solid fluidised bed pressure fluctuations for different particle size distributions of a linear-low-density polyethylene resin. ***L.-L. van der Lee, I. Hulme, A. Kantzas¹, R. J. Hugo** (Univ. Calgary, CA; ¹Tomogr. Imag. Porous Media Lab., Calgary, CA) [461]

E8.6 16.20 A method for agglomeration detection and control in industrial fluidized beds. ***J. Nijenhuis, R. Korbee¹, J. Lensselink¹, J. H. A. Kiel¹, J. R. van Ommen** (Delft Univ. Technol., NL; ¹ECN, Petten, NL) [1318]

E8.7 16.40 Injection of a liquid spray into a fluidized bed: methods for improving the initial liquid dispersion. ***P. K. House, M. Saberian, C. L. Briens, F. Berruti, E. Chan¹** (Univ. W. Ontario, London ON, CA; ¹Syncrude Canada Ltd., Edmonton AB, CA) [913]

E8.8 17.00 Analysis of the transport disengaging height in the fluidized bed of heterogeneous particles. **L. Cipolato, M. W. Donida, *K. Tannous** (UNICAMP, Campinas, BR) [467]

E8.9 17.20 Application of plasma system in the process of low-grade coals burning for optimization of combustion process in fire-chambers. ***A. S. Askarova, E. I. Lavrishcheva** (Al-Faraby Kaz. Nat. Univ., Almaty, KZ) [1]

E8.10 17.40 The modeling of physical-chemical technological process in the fire chambers equipped by swirl burners. ***A. S. Askarova, E. I. Lavrishcheva, I. V. Loktionova** (Al-Faraby Kaz. Nat. Univ., Almaty, KZ) [3]

F1 Lectures – Monday morning Mixing

Chairpersons: **A. W. Nienow, V. Machoň**

F1.1 8.30 Experiences with application of LDA/PDA methods in an agitated vessel. ***P. Dittl, V. Šedivý, B. Kysela** (Czech Tech. Univ., Praha, CZ) [1477]

F1.2 8.50 CFD prediction of homogenization in a tall cylindrical vessel. ***M. Moštěk, M. Jahoda, A. Kukulová, V. Machoň** (Inst. Chem. Technol., Praha, CZ) [488]

F1.3 9.10 Simulation of mixing processes in a laminar chaotic flow. **E. P. L. Roberts, *J. Fuentes** (UMIST, Manchester, UK) [1332]

F1.4 9.30 The versatility of up-pumping hydrofoil agitators. ***A. W. Nienow, W. Bu-jalski** (Univ. Birmingham, UK) [69]

9.50 Coffee break, plenary lecture

F1.5 11.10 Modelling of oxygen transfer in stirred bioreactors for bacteria, yeasts and fungus broths. ***A.-I. Galaction, D. Cascaval¹, C. Oniscu¹, M. Turnea** (Univ. Med. Pharm., Iasi, RO; ¹Tech. Univ., Iasi, RO) [1458]

F1.6 11.30 Experimental studies of mechanically agitated gas - solid - liquid systems. ***J. Karcz, A. Kielbaso-Rępała** (Tech. Univ. Szczecin, PL) [563]

F1.7 11.50 Force effects of the macro-instability of flow pattern on radial baffles in a cylindrical vessel stirred with a pitched-blade impeller or a Rushton turbine. ***P. Hasal, I. Fořt¹, J. Kratěna¹** (Inst. Chem. Technol., Praha, CZ; ¹Czech Tech. Univ., Praha, CZ) [574]

F1.8 12.10 Time dependence of tracer concentration in a system of non-ideal continuous mixers. ***M. Jahoda, V. Kudrna, J. Čermáková, H. Majřřová, P. Veverka, V. Machoň** (Inst. Chem. Technol., Praha, CZ) [886]

F2 Lectures – Monday afternoon PRES 2004

Integrated unit operations

Chairpersons: **G. Wozny, T. Zhelev**

F2.1 14.00 Keynote lecture: Reactive distillation towers: new strategies for start up. **J.-U. Replek, F. Reepmeyer, *G. Wozny** (Tech. Univ., Berlin, DE) [1509]

F2.2 14.20 Keynote lecture: Rate-based modelling of dividing wall columns - a new application to reactive systems. ***I. Mueller, M. Kloecker, E. Y. Kenig** (Univ. Dortmund, DE) [1513]

F2.3 14.40 Process improvement by application of membrane bioreactors. ***A. Drews, M. Kraume** (Tech. Univ., Berlin, DE) [1521]

F4 Lectures – Tuesday afternoon PRES 2004

F2.4 15.00 Transesterification of dimethyl carbonate via catalytic distillation. ***J. Richter, C. Noeres, I. Zielinska-Nadolska¹, A. Górak** (Univ. Dortmund, DE; ¹Inst. Chem. Eng., Gliwice, PL) [1531]

15.20 Coffee break, poster session

F2.5 16.00 Modelling, design and optimisation studies of batch and semi-batch reactors. **X. Zheng, R. Smith, *C. Theodoropoulos** (UMIST, Manchester, UK) [1512]

F2.6 16.20 Design of a DBD wire-cylinder reactor for NO_x emission control - experimental and modeling. ***M. Moscica Santillan, A. Vincent, J. Amouroux** (UPMC/ENSCP, Paris, FR) [519]

F2.7 16.40 Modelling of the Lenzing SO₂ recovery process and validation with plant data. ***M. Steindl, M. G. Wolfinger, H. Sixta¹, A. Friedl²** (Wood K-Plus, Lenzing, AT; ¹Lenzing R&D, Lenzing, AT; ²Univ. Technol., Wien, AT) [410]

F2.8 17.00 Pollutant emissions management in an existing plant by diminishing the production of undesirable compounds: the case of CHF₃. ***M. N. Pantzali, A. A. Mouza, S. V. Paras** (Aristotle Univ., Thessaloniki, GR) [362]

F2.9 17.20 Integrated cement production with municipal solid waste incineration. **W. H. Cheung, K. K. H. Choy, C.-W. Hui, *G. McKay** (Hong Kong Univ. Sci. Technol., HK) [1415]

F2.10 17.40 Retrofitting a steel cold rolling mill: economical and environmental benefits. ***R. Sublet, M. Sorin¹, A. Hammach¹, B. Poulin¹, J.-S. Thomas, J. Cigana²** (Veolia Env., Paris, FR; ¹CANMET, Varennes Que., CA; ²Anjou Rech., Maisons-Laffitte, FR) [421]

F2.11 18.00 Design and optimisation of the dividing wall column for light hydrocarbon separation in oil refinery. ***R. Isopescu, G. Bumbac, D. C. Popescu¹, I. Grozeanu²** (Univ. Politehnica, Bucuresti, RO; ²SNP Petrom, Ploiesti, RO) [1660]

F3 Lectures – Tuesday morning PRES 2004

E-learning in academia and continuous professional development

Chairpersons: **G. Wozny, F. Friedler**

F3.1 8.30 Keynote lecture: Improvement of learning of process technology using modern information technology - keynote lecture. ***G. Wozny, A. Klein, R. Zerry, C. Hausmanns, L. Urbas** (Tech. Univ. Berlin, DE) [1156]

F3.2 9.10 Educational environment on technologies for efficient water treatment. **Y. Avramenko, *A. Kraslawski** (Lappeenranta Univ. Technol., FI) [1495]

F3.3 9.30 Development of e-learning applications for chemical engineering education in "POLITEHNICA" University of Bucharest. **V. Plesu, *P. Postelnicescu, R. Isopescu, R. Onofrei** (Univ. Politehnica, Bucuresti, RO) [1183]

9.50 Coffee break, plenary lecture

F3.4 11.10 Keynote lecture: Experiences and future developments in e-learning and e-teaching of engineering education. ***S. Perry, J. Klimes** (UMIST, Manchester, UK) [1469]

F3.5 11.50 Towards a methodology for e-learning in process and chemical engineering. ***L. Jiménez-Esteller, B. Gauss¹, C. Hausmanns¹, L. Urbas¹, G. Wozny¹** (Univ. Barcelona, ES; ¹Tech. Univ., Berlin, DE) [1393]

F3.6 12.10 Landfills as a valuable source of experience for (E)learning in continuous professional development, and not only... ***M. Meres, K. Szafnicki¹** (Ec. Nat. Sup. Mines, Saint-Etienne, FR; ¹Jagellonian Univ., Krakow, PL) [1508]

Integration of renewables; waste processing and management

Chairpersons: **A. Kraslawski, P. Glavic**

F4.1 14.00 Validation of a biogas production simulation model with real plant data. ***A. Friedl, L. Schlegl, M. Pfeiffer, M. Harasek** (Vienna Univ. Technol., Wien, AT) [774]

F4.2 14.20 Industrial utilization of alternative fuel - thermal processing of sewage sludge. **P. Štásta, *J. Boráň, L. Bébar, P. Stehlik, J. Oral** (Brno Univ. Technol., CZ) [1008]

F4.3 14.40 Optimization of an SOFC-based decentralized polygeneration system for providing energy services in an office-building in Tokyo. ***C. Weber, M. Koyama¹, S. Kraines², F. Maréchal, D. Favrat** (Swiss Fed. Inst. Technol., Lausanne, CH; ¹Univ. Sendai, JP; ²Univ. Tokyo, JP) [1398]

F4.4 15.00 An effective technique for wastewater minimisation in batch processes - 2. Multiple contaminants. **T. Majoz** (Univ. Pretona, ZA) [1022]

15.20 Coffee break, poster session

F4.5 16.00 Hybrid system for design of wastewater treatment. ***Y. Avramenko, A. Kraslawski, N. V. Menshutina¹** (Lappeenranta Univ. Technol., FI; ¹Mendelev Univ. Chem. Technol., Moskva, RU) [1366]

F4.6 16.20 Evaluation of the environmental impacts associated to canned tuna manufacture by Life Cycle Assessment. ***M. T. Moreira, A. Hospido, M. E. Vázquez¹, A. Cuevas¹, G. Feijoo** (Univ. Santiago de Compostela, ES; ¹Luis Calvo Sanz SA, Carballo, ES) [1128]

F4.7 16.40 Life cycle assessment as an engineer's tool?. ***A. Niederl, M. Narodslawsky** (Univ. Technol., Graz, AT) [1389]

F4.8 17.00 Process redesign with genetic algorithm. **X. Turon, *J. Labidi, J. Paris¹** (Univ. Girona, ES; ¹Ec. Polytech. Montreal, CA) [815]

F4.9 17.20 Heat exchanger network retrofit by genetic algorithms. **R. Bochenek, *J. Jezowski** (Rzeszow Univ. Technol., PL) [217]

F4.10 17.40 Fresh water savings through genetic algorithm optimization. **V. Lavric, *P. Iancu, V. Plesu, I. Ivanescu¹** (Univ. Politehnica, Bucuresti, RO; ¹PETROM, Bucuresti, AL) [246]

F5 Lectures – Wednesday morning Particulate solids

Material flow

Chairperson: **H. Kalman**

F5.1 8.30 Keynote lecture: Mechanics of particle adhesion. **J. Tomas** (O. von Guericke Univ., Magdeburg, DE) [351]

F5.2 9.10 Scale-up of high shear wet granulation process. **Z. Bělohlov, L. Břenková, P. Durdil¹, *J. Hanika², M. Lehotský¹, P. Rápek¹, V. Tomášek¹** (Inst. Chem. Technol., Praha, CZ; ¹Zentiva, Praha, CZ; ²Inst. Chem. Proc. Fundam., Praha, CZ) [1120]

F7 Lectures – Thursday morning Particulate solids

F5.3 9.30 DEM simulation of cohesive powder flow in Jenike shear cell. ***R. Tykhoniuk, J. Tomas** (O. von Guericke Univ., Magdeburg, DE) [517]

F5.4 9.50 Determination of the stress distribution in a specially instrumented roll press during powder compaction. ***D. J. Herold, K. Sommer** (Tech. Univ. München, DE) [138]

10.10 Coffee break

F5.5 10.50 Damping properties of cohesive particulate solids. **A. Haack, G. Kache, J. Tomas** (O. von Guericke Univ., Magdeburg, DE) [343]

F5.6 11.10 Segregation of particulate solids with different densities. **R. P. van der Lans** (Novozymes A/S, Bagsvaerd, DK) [160]

F5.7 11.30 Determination of the stress ratio λ in a special constructed die sensor over the hole height of a tablet. ***S. Haas, K. Sommer** (Tech. Univ. München, DE) [291]

F5.8 11.50 Lateral transportation in a rotating drum. ***H. P. Kuo, Y. C. Hsiao** (Chang Gung Univ., Tao-Yuan, TW) [185]

F5.9 12.10 Study of granular mixing in a vibrated bed with electrostatic force. ***L.-S. Lu, S.-S. Hsiau**¹ (Kuang Wu Inst. Technol., Taipei, TW; ¹Nat. Cent. Univ., Chung-Li, TW) [732]

F6 Lectures – Wednesday afternoon Particulate solids

Characterization and flow

Chairperson: **J. Tomas**

F6.1 14.00 Heat transfer to gas-particles flow in dilute state. **M. Haim, H. Kalman** (Ben-Gurion Univ. Negev, Beer Sheva, IL) [900]

F6.2 14.20 Phase migration in pastes and gels - a fundamentally based method of assessment. **M. A. Bardesley, J. Bridgwater** (Univ. Cambridge, UK) [75]

F6.3 14.40 Characterization of the wetting properties of hydrophobic powders by means of the capillary rise method. ***S. Thuemmler, D. Hoehne, K. Husemann** (TU Bergakademie Freiberg, DE) [288]

F6.4 15.00 The effect of binder solidification rate on granule microstructure. ***F. Stepanek, M. Ansari** (Imperial Coll., London, UK) [752]

15.20 Coffee break, poster session

F6.5 16.00 Aerated discharge of a bin loaded with radially segregated solids. ***A. D'Arco, G. Donsi, G. Ferrari, M. Poletto** (Univ. Salerno, Fisciano, IT) [894]

F6.6 16.20 DEM simulation of diametrical compression and fracture of particle compounds. ***M. Khanal, W. Schubert, J. Tomas** (Otto v. Guericke Univ., Magdeburg, DE) [1024]

F6.7 16.40 Angle of internal friction in first flow mechanism. **J. Zegzulka** (Tech. Univ. Ostrava, CZ) [907]

F6.8 17.00 Equivalent surface area of a packed bed. **B. du Plessis** (Univ. Pretoria, ZA) [24]

Comminution

Chairperson: **E. Forssberg**

F7.1 8.30 Keynote lecture: Preparation of nano-particles by means of mechanochemical reaction. **Q. Zhang, T. Ito**¹, ***F. Saito** (Tohoku Univ., Sendai, JP; ¹Nittetsu Mining Co., Tokyo, JP) [1030]

F7.2 9.10 Crushing glass and silica particles under an ultrasonic field. ***R. W. Valderrama, Y. Vargas**¹, **L. Gutiérrez** (Univ. Technol., Valparaiso, CL; ¹Univ. Santiago de Chile, CL) [1497]

F7.3 9.30 Mechanochemical modification of fluidized fly ash for its utilisation in building materials preparing. **N. Števelová** (Tech. Univ. Košice, SK) [631]

F7.4 9.50 A study on liner shape of an industrial-scale tube mill for cement clinker - from the viewpoint of impact energy of media simulated by DEM. ***H. Mio, M. Ito**¹, **J. Kano, F. Saito, T. Sverak**² (Tohoku Univ., Sendai, JP; ¹Taiheyo Cement Corp., Tokyo, JP; ²Tech. Univ. Brno, CZ) [1029]

10.10 Coffee break

F7.5 10.50 Breakage behaviour of granulates by compression. ***S. Antonyuk, J. Tomas, S. Heinrich, L. Mörf** (O. von Guericke Univ., Magdeburg, DE) [482]

F7.6 11.10 An improved equation to model power consumption in SAG mills. **L. Magne, A. Campi, R. W. Valderrama**¹ (Univ. Santiago de Chile, CL; ¹Univ. Technology, Valparaiso, CL) [1485]

F7.8 11.30 Comparison of two discrete models for closed mill-classifier systems. ***P. B. Kis, C. Mihálykó**¹, **B. G. Lakatos**¹ (Coll. Dunaujvaros, HU; ¹Univ. Veszprem, HU) [495]

F8 Lectures – Thursday afternoon Particulate solids

Processes

Chairperson: **J. Novosad**

F8.1 14.00 Keynote lecture: Considering mutual interactions between operating units in the chemical industry. **H. Kalman** (Ben-Gurion Univ. Negev, Beer-Sheva, IL) [1042]

F8.2 14.40 Application of electrical tomography for imaging industrial processes. **T. Dyakowski** (UMIST, Manchester, UK) [1071]

F8.3 15.00 Pelleting of culinary powders in a climatically adjustable press chamber in consideration of the T_g (Aw) state diagram. ***S. Haas, K. Sommer** (Tech. Univ. München, DE) [315]

15.20 Coffee break, poster session

F8.4 16.00 Solution of population balance equations in particulate systems: coupled nucleation, aggregation, and growth. **A. H. Alexopoulos, C. Kiparissides** (Aristotle Univ., Thessaloniki, GR) [1357]

G2 Lectures – Monday afternoon Computer aided process engineering

F8.5 16.20 The production of PCC and its applications. **A. Fernandez, *D. Fell** (Hosokawa Alpine AG, Augsburg, DE) [415]

F8.6 16.40 The effect of adhesion and cohesion forces on the quality of the through-out colored surfaces of slate scales. ***T. Sverak, M. Trojan¹, J. Strazisar²** (Univ. Technol., Brno, CZ; ¹Univ. Pardubice, CZ; ²Univ. Ljubljana, SI) [1102]

F8.7 17.00 Generation of titania nanopowder via sol-gel synthesis. ***W. Hintz, T. Nikolov, V. Yordanova, J. Tomas** (O. von Guericke Univ., Magdeburg, DE) [433]

F8.8 17.20 Granular flow in a louver-walled moving bed with flow corrective elements. ***S.-S. Hsiau, J. Smid¹, W.-D. Tu, C.-Y. Peng¹** (Nat. Cent. Univ., Chung-Li, TW; ¹Energy&Res. Labs., Hsinchu, TW) [581]

G

G1 Lectures – Monday morning Computer aided process engineering

Software and applications

Chairpersons: **R. Calder, W. Y. Svrcek**

G1.1 8.30 Integrating engineering activities through multi-discipline, site, tasking software. **R. A. Calder** (Invensys SimSci, Essor, UK) [1623]

G1.2 8.50 Simulation of solids processes using commercial software. ***M. Sisler, U. Teipel¹, J. Skrivaneck, P. Dittl** (Czech Tech. Univ., Praha, CZ; ¹Fraunhofer Inst. Chem. Technol., Pfinztal, DE) [885]

G1.3 9.10 Optimal design of a catalytic distillation column using Mixed Integer Non Linear Programming MINLP with a non equilibrium stage model. ***J. M. Gomez, J.-M. Reneaume, M. Roques** (ENSGTI, Pau, FR) [355]

G1.4 9.30 MINLP optimisation of reactive distillation columns using a heuristic based initialisation scheme. ***S. Barkmann, G. Sand, M. Tylko, S. Engell, G. Schembecker¹** (Univ. Dortmund, DE; ¹PDC Inc., Santa Barbara CA, US) [1226]

9.50 Coffee break, plenary lecture

G1.5 11.10 Computer aided design of LDPE autoclaves. **P. Pladis, E. Papadopoulos, *C. Kiparissides** (Aristotle Univ. Thessaloniki, GR) [1349]

G1.6 11.30 Open source chemical process simulation with Sim42. ***R. Cota, B. R. Young, W. Y. Svrcek, C. Morris¹, M. Satyro²** (Univ. Calgary, CA; ¹Red Tree Dev., Fernie BC, CA; ²Virtual Mater. Grp., Calgary, CA) [314]

G1.7 11.50 Use Model Vision Studio for simulation some chemical technological processes. ***M. V. Silos, M. Karpunina, E. M. Koltsova** (Mendeleev Univ. Chem. Technol., Moskva, RU) [375]

G1.8 12.10 Mathematical modeling of reaction in iron ore pellet with syn-gas. ***M. S. Valipour, M. Y. Motamed Hashemi, Y. Saboohi** (Sharif Univ. Technol., Tehran, IR) [1114]

Process control

Chairpersons: **M. Bakošová, M. P. Lazarevic**

G2.1 14.00 Design and control of chemical reactors in recycle systems. **C. S. Bildea, *A. Dimian¹** (Delft Univ. Technol., NL; ¹Univ. Amsterdam, NL) [1256]

G2.2 14.20 A generalised automated tuning algorithm for model predictive controllers. ***J. van der Lee, B. R. Young, W. Y. Svrcek** (Univ. Calgary, CA) [443]

G2.3 14.40 Application of adaptive lambda-tracking for control of a fan heater. ***M. Bakošová, M. Ondrovičová, M. Karšaiová** (Slovak Univ. Technol., Bratislava, SK) [1149]

G2.4 15.00 A combined global/local control system robust to model inaccuracy. ***S.-S. Jang, J.-Z. Chu, J.-H. Che** (Nat. Tsing-Hua Univ., Hsin Chu, TW) [4]

15.20 Coffee break, poster session

G2.5 16.00 Control system design for dual separation. ***A. Khelassi, A. Maidi** (Univ. Boumerdes, DZ) [1023]

G2.6 16.20 Application of self-tuning PID control to the limestone dissolution process. **H. Hapoğlu, S. Altuntas, H. Vural, *G. Özkan, M. Alpbaz** (Ankara Univ., TR) [783]

G2.7 16.40 Temperature control of products of the packed distillation column by using nonlinear adaptive generic model control. ***S. Karacan, Z. Moslempour, H. Hapoğlu, M. Alpbaz** (Ankara Univ., TR) [744]

G2.8 17.00 Simulation and control of a distillation column with a fuzzy logic controller. ***A. Farzi, A. Mehrabani-Zeinabad, F. Sheikholeslam** (Isfahan Univ. Technol., IR) [713]

G2.9 17.20 PDLpha-type iterative learning control for fractional LTI system. **M. P. Lazarevic** (Fac. Mech. Eng., Beograd, YU) [359]

G2.10 17.40 Modeling, simulation and control of a methanol synthesis fixed bed reactor. ***M. Shahrokhi, G. Baghmisheh** (Sharif Univ. Technol., Tehran, IR) [1179]

G3 Lectures – Tuesday morning Computer aided process engineering

Modelling and simulation

Chairpersons: **F. Stepanek, E. M. Koltsova**

G3.1 8.30 Multi-scale modelling of vacuum contact drying. ***M. Kohout, F. Stepanek** (Imperial Coll., London, UK) [648]

G3.2 8.50 CFD simulations applied to the assessment of pollutant transfers in process operations. ***D. Guerra, L. Ricciardi, J.-C. Laborde, S. Domenech¹** (Inst. Radioprotect. Surete Nucl., Gif sur Yvette, FR; ¹LGC, Toulouse, FR) [339]

G3.3 9.10 Prediction of film elongation behaviour in drawing between rolls. ***T. Yamada, A. Tsukamoto, T. Takahashi, K. Tada, M. Fukunaga¹, A. Yokoyama²** (Univ. Fac. Eng., Kanazawa, JP; ¹Cybernet Systems Co, Tokyo, JP; ²Univ. Kyoto, JP) [682]

G5 Lectures – Wednesday morning Computer aided process engineering

G3.4 9.30 Mathematical simulation of mixing process in a spinning disk reactor. ***T. N. Ilyina-Sidorova, E. M. Koltsova, A. Chianese**¹ (Mendelev Univ. Chem. Technol., Moskva, RU; ¹La Sapienza, Roma, IT) [628]

9.50 Coffee break, plenary lecture

G3.5 11.10 State estimation issues in activated sludge processes. ***M. Mulas, A. M. Pulis, S. Tronci** (Univ. Cagliari, IT) [728]

G3.6 11.30 An emergence of transient pacemakers in a one dimensional excitable medium. ***T. Godula, H. Sevcikova** (Inst. Chem. Technol., Praha, CZ) [976]

G3.7 11.50 Factorial design and simulation of panose production: dextransucrase acceptor reaction. ***S. Rodrigues, L. M. F. Lona¹, T. T. Franco²** (Univ. Fed. Rio Grande, Natal, BR; ¹Univ. Campinas, BR) [109]

G3.8 12.10 Multiple-models based nonlinear predictive control strategy with application to polymerization reactor control. **H. Zhuang, M. Oshima¹, *M. S. Chiu** (Nat. Univ. Singapore, SG; ¹Univ. Kyoto, JP) [1479]

G4 Lectures – Tuesday afternoon Computer aided process engineering

Simulation, optimization and control

Chairpersons: **J. Sefcik, C. Kiparissides**

G4.1 14.00 Efficient calculation of the periodic steady-state in reverse-flow reactors. ***B. Gloeckler, G. Kolios, G. Eigenberger** (Univ. Stuttgart, DE) [852]

G4.2 14.20 Sulfur in natural gas transportation: deposition and solubility. ***J. P. Serin, P. Cezac, F. Broto, G. Mouton¹** (ENSGTI, Pau, FR; ¹Gaz Sud-Ouest, Pau, FR) [274]

G4.3 14.40 Reaction oriented characterization of aromatic in diesel fuels by deconvolution of HPLC-RI profiles. ***L. Sassu, L. Leoni, L. Erby¹, C. Delitala, R. Baratti¹, S. Melis** (Saras Ric. Srl, Assemini, IT; ¹Univ. Cagliari, IT) [156]

G4.4 15.00 Reachability analysis and control of turbulent coagulators. ***J. Sefcik, E. Bonanomi, M. Morari, M. Morbidelli** (ETH, Zurich, CH) [221]

15.20 Coffee break, poster session

G4.5 16.00 Dynamic simulation of particle size distribution in suspension polymerization reactors. **C. Kotoulas, *C. Kiparissides** (Aristotle Univ., Thessaloniki, GR) [1351]

G4.6 16.20 Model predictive control of continuous MSMRP crystallizers. ***N. Moldovanyi, B. G. Lakatos, F. Szeifert** (Univ. Veszprem, HU) [308]

G4.7 16.40 ANFIS modeling for advanced process control in an anaerobic wastewater treatment plant under unsteady conditions. **A. Perendeci, S. Arslan, A. Tanyolac¹, *S. S. Celebi¹** (Turkish Sugar Fact. Corp., Ankara, TR; ¹Hacattepe Univ., Ankara, TR) [1345]

G4.8 17.00 Simulation of the modified Claus process using Aspen Plus. ***B. K. Abdalla, H. E. Al-Fadala, M. M. Al-Qadi, H. Mehdizadeh, M. S. Abu Nada** (Univ. Qatar, Doha, QA) [1333]

G4.9 17.20 Simulation and optimization of the production process of phthalic anhydride using Aspen Plus. ***J. A. Jara, A. Garea, A. Irbaien** (Univ. Cantabria, Santander, ES) [714]

Modelling, synthesis and design

Chairpersons: **R. Gani, P. Glavic**

G5.1 8.30 Keynote lecture: Computer-aided methods and tools for product-process synthesis & design. **R. Gani** (Tech. Univ. Denmark, Lyngby, DK) [967]

G5.2 9.10 About the study of reaction separation with recycle systems through a systematic approach. ***E. Ramirez, R. Gani** (Tech. Univ. Denmark, Lyngby, DK) [877]

G5.3 9.30 Modelling of bioprocesses through a computer-aided modelling system. ***M. Sales-Cruz, R. Gani** (Tech. Univ. Denmark, Lyngby, DK) [285]

G5.4 9.50 Group contribution based process flowsheet synthesis, design and modelling. ***L. d'Anteroches, R. Gani** (Tech. Univ. Denmark, Lyngby, DK) [269]

10.10 Coffee break

G5.5 10.50 Model aided management in ethylene cracking process. ***Z. Bělohav, T. Herink¹, J. Lederer¹, P. Záměstný** (Inst. Chem. Technol., Praha, CZ; ¹Chemopetrol, Litvínov, CZ) [924]

G5.6 11.10 Design approach to the problem of energy integrated process synthesis. **D. Krajnc, Z. Novak Pintarič, *P. Glavic** (Univ. Maribor, SI) [405]

G5.7 11.30 Multi agent systems and batch process control. **P. Burian** (Inst. Chem. Technol., Praha, CZ) [649]

G5.8 11.50 Auditing of batch processes. ***G. Janssens-Maenhout, L. Dechamp, J. B. Thevenon¹, P. Dransart¹** (JRC, Ispra, IT; ¹Eurware AREVA, Equeurdreville, FR) [1150]

G6 Lectures – Wednesday afternoon Heat transfer processes and equipment

Numerical & experimental studies

Chairperson: **Z. Jegla**

G6.1 14.00 Application of heat transfer enhancement on vertical thermosyphon reboilers using tube inserts. ***M. R. Jafari Nasr, M. Tahmasebi¹** (NPC-RT, Tehran, IR; ¹Univ. Technol., Tehran, IR) [59]

G6.2 14.20 Experimental measuring of the steam economy in a triple effect falling film evaporator with film promoter, in laboratory scale. ***L. Carradori, M. L. Mora Bejarano, W. M. Salvagnini, M. E. S. Taqueda** (Univ. Sao Paulo, BR) [296]

G6.3 14.40 Development and performance evaluation of a falling-film evaporator with film promoter in a pilot plant. **A. D. Martini, W. M. Salvagnini, *M. E. S. Taqueda** (Univ. Sao Paulo, BR) [292]

G6.4 15.00 Axial dispersion model in finite element analysis of heat and mass transfer in pipes. ***R. Žitný, J. Thýn** (Czech Tech. Univ., Praha, CZ) [141]

15.20 Coffee break, poster session

G6.5 16.00 Radiative models for the furnace side of a bottom-fired reformer. ***F. Farhadi, M. Bahrami Babaheidary, M. Y. Motamed Hashemi** (Sharif Univ. Technol., Tehran, IR) [1139]

G6.6 16.20 Fired heaters design algorithm and software developments. **A. Karimi, M. GhalbiAhangari, H. A. Ghadiryan, *A. Tavasoli** (Res. Inst. Pet. Ind., Tehran, IR) [1086]

G6.7 16.40 Trial testing of lime baking by pulverized coal in real conditions of a lime-kiln furnace. ***B. S. Repic, R. V. Mladenovic, D. V. Dakic** (Inst. Nucl. Sci. Vinca, Beograd, YU) [240]

G6.8 17.00 Experimental study of the electric field-enhanced heat transfer from swirling combustion. **M. Zake, I. Barmina, D. Turlajs¹, A. Ramata¹, *A. Mejere²** (Univ. Latvia, Salaspils, LV; ¹Riga Tech. Univ., LV) [79]

G7 Lectures – Thursday morning Heat transfer processes and equipment

Heat exchangers

Chairperson: R. Žitný

G7.1 8.30 Fundamentals and control of heat exchanger fouling. **K. Everaert, *J. Baeyens¹** (Energy CA, Bruxelles, BE; ¹Univ. Antwerpen, BE) [577]

G7.2 8.50 Thermal analysis of a plate heat exchanger in fouling conditions - analysis of process information and calculations based on design equations. ***M. V. Riihimäki, E. Muurinen, R.-L. Keiski** (Univ. Oulu, FI) [1168]

G7.3 9.10 State estimation by the Luenberger observer of a tubular heat exchanger with internal heat source. ***L. Hassimi, Y. Chetouani¹, M. A. Abdelghani-Idrissi¹** (INSA Rouen, Mont Saint Aignan, FR; ¹Univ. Rouen, FR) [727]

G7.4 9.30 Thermodynamic analysis in a parallel flow annular heat exchanger. **N. Al-louache, *S. Chikh** (USTHB, Bab Ezzouar, DZ) [1432]

G7.5 9.50 New correlation for natural convection of finned tube A-type air cooler. ***F. Farhadi, N. Davani, P. Ardalan** (Sharif Univ. Technol., Tehran, IR) [1134]

10.10 Coffee break

G7.6 10.50 Numerical simulation of microwave heating in DIC reactor. ***L. Klima, J. Vrba¹, R. Žitný¹, K. Allaf, V. Sobolik** (Univ. La Rochelle, FR; ¹Czech Tech. Univ., Praha, CZ) [1163]

G7.7 11.10 Fluid dynamics in a tube equipped with wire matrix inserts. ***A. Smeethe, P. Drögemüller, J. Wood¹, W. Bujalski¹** (Cal Galvin Ltd., Alcester, UK; ¹Univ. Birmingham, UK) [573]

G8 Lectures – Thursday afternoon Heat transfer processes and equipment

Drying

Chairperson: B. Čermák

G8.1 14.00 Model development of atmospheric freeze drying in fluidized bed. **N. V. Menshutina, *A. E. Korneeve, S. V. Goncharova, H. Leuenberger¹** (Mendeleev Univ. Chem. Technol., Moskva, RU; ¹Univ. Basel, CH) [636]

G8.2 14.20 Effect of compression and shear forces on the detachment of a maltodextrin film during drying on inert solid surfaces. ***F. P. Collares, J. R. D. Finzer, T. G. Kieckbusch** (UNICAMP, Campinas, BR) [544]

G8.3 14.40 Optimal flight design for cascading rotary dryers. ***S. Shahhosseini, M. T. Sadeghi, M. M. Saber** (Iran Univ. Sci. Technol., Tehran, IR) [1135]

G8.4 15.00 Drying of apple and carrot: modeling and simulation of physical phenomena. **S. Timoumi, *D. Mihoubi, F. Zagrouba** (INRST, Hammam-Lif, TN) [119]

15.20 Coffee break, poster session

G8.5 16.00 Water sorption, infrared drying kinetics and shrinkage of apple and carrot. **S. Timoumi, *D. Mihoubi, F. Zagrouba** (INRST, Hammam-Lif, TN) [120]

G8.6 16.20 Infrared drying of apple slices: Water sorption properties, kinetics and quality changes. **S. Timoumi, *D. Mihoubi, F. Zagrouba** (INRST, Hammam-Lif, TN) [121]

G8.7 16.40 Research of mass-transfer in fibrous sorption-active materials. **E. S. Borisova, *O. V. Chub, A. V. Matveev¹, O. P. Klenov, A. S. Noskov** (Boreskov Inst. Catal., Novosibirsk, RU; ¹Int. Tomogr. Cent., Novosibirsk, RU) [175]

G8.8 17.00 Multivariable control rules for heat-integrated plants. ***R. Tellez, B. R. Young, W. Y. Svrcek** (Univ. Calgary, CA) [235]

G8.9 17.20 A hybrid system for the simultaneous thermal storage of solar and electric energy. **Z. Ait Hammou, *M. Lacroix¹** (Univ. Sherbrooke, CA; ¹Ec. Mines, Albi Carmaux, FR) [1148]

H

H1 Lectures – Monday morning PRES 2004

Integrated process design

Chairpersons: J. Klemes, K. Hirata

H1.1 8.30 Keynote lecture: Rethinking process development in fine and specialty chemicals. **R. Smith** (UMIST, Manchester, UK) [1499]

H1.2 9.10 Energy recovery and environmental concerns addressed through energy-pinch analysis. **T. Zhelev** (Univ. Limerick, IE) [1385]

H1.3 9.30 Minimum energy expenditure in the thermal separation of hydrocarbon mixtures at low temperature. ***M. Markowski, K. Urbaniec, A. Budek, R. Grabarczyk** (Warsaw Univ. Technol., Plock, PL) [879]

9.50 Coffee break, plenary lecture

H1.4 11.10 Keynote lecture: Flexibility study of a utility system. ***P. Chan, C.-W. Hui** (Hong Kong Univ., HK) [1395]

H1.5 11.50 Optimal specialty chemical plant retrofit with combined heat and power production. **A. Goršek, *P. Glavič, M. Bogataj** (Univ. Maribor, SI) [357]

H1.6 12.10 Optimisation of a commercial olefin plant using pinch analysis. **A. A. Al-Rabiah** (King Saud Univ., Riyadh, SA) [1369]

H2 Lectures – Monday afternoon PRES 2004

Emissions minimisation

Chairpersons: **P. Stehlík, R. Smith**

H2.1 14.00 Keynote lecture: High durability ePTFE membrane filtration and catalytic destruction of polychlorinated dibenzo-p-dioxins and dibenzofurans long-term experience at European incineration plants. **G. G. Pranghofer** (W. L. Gore&Assoc., Putzbrunn, DE) [1387]

H2.2 14.40 Analysis of a power plant concept with inherent separation of CO₂ - chemical-looping combustion. ***B. Kronberger, M. Luissner, H. Hofbauer** (Vienna Univ. Technol., Wren, AT) [188]

H2.3 15.00 Optimisation of energy requirements of a PSA process for CO₂ recovering. **D. Salhi, D. Tondeur, *M. A. Latifi** (CNRS-ENSIC, Nancy, FR) [1370]

15.20 Coffee break, poster session

H2.4 16.00 Keynote lecture: Effective scheduling of a large-scale paint production system. ***R. Adonyi, G. Birocs, F. Friedler** (Univ. Veszprem, HU) [1607]

H2.5 16.40 Optimisation of integrated energy systems for remote communities considering economic, LCA factors and gaseous emissions with evolutionary algorithm. ***X. Pelet, D. Favrat, G. Leyland** (EPFL, Lausanne, CH) [1504]

H2.6 17.00 Techno-economic modelling and cost functions of CO₂ capture processes. ***J. Klemes, B. Li, I. Bulatov** (UMIST, Manchester, UK) [1437]

H2.7 17.20 Calorimetric measurements for modelling elimination of carbon dioxide by dissolution in aqueous systems. ***D. Koschel, J.-Y. Coxam, L. Rodier, V. Majer** (Univ. Blaise Pascal/CNRS, Aubiere, FR) [1307]

H2.8 17.40 Use of LCA to investigate the environmental impact of carbon sequestration in the ocean. **R. B. H. Tan, *H. H. Khoo** (Nat. Univ. Singapore, SG) [196]

H3 Lectures – Tuesday morning PRES 2004

Drying

Chairpersons: **Z. Y. Li, A. Koziol**

H3.1 8.30 Keynote lecture: Modeling, simulation and control; case study for wood drying systems (WDS) and clinker rotary kiln (CRK). **S. Tarasiewicz** (Laval Univ. Quebec, CA) [1258]

H3.2 9.10 Mathematical modelling and computer simulation of heat and mass transfer during infrared processing (micronization) of yellow peas. ***S. Cenkowski, J. T. Hong, M. G. Scanlon, S. D. Arntfield** (Univ. Manitoba, Winnipeg MB, CA) [1202]

H3.3 9.30 Modeling superheated steam vacuum drying of wood. ***M. Defo, Y. Fortin, A. Cloutier** (Univ. Laval, QC, CA) [1229]

9.50 Coffee break, plenary lecture

H3.4 11.10 Mechanical effects in saturated capillary-porous materials during convective and microwave drying. **S. J. Kowalski, K. Rajewska, *A. Rybicki** (Poznan Univ. Technol., PL) [380]

H3.5 11.30 A dynamic analysis of drying energy consumption. **N. V. Menshutina, *M. G. Gordienko, A. A. Voinovskiy, T. Kudra¹** (Mendelev Univ. Chem. Technol., Moskva, SA; ¹CANMET, Varennes Que., CA) [426]

H3.6 11.50 Experimental and numerical study of a solar convective tunnel drier. ***B. Khiari, S. Ben Mabrouk, M. Sassi¹** (INRST, Hammam-Lif, TN; ¹Ec. Nat. Ing., Monastir, TN) [126]

H3.7 12.10 A novel plant for extraction and drying of milk protein. **V. N. Marchevsky, *O. O. Seminsky** (Nat. Tech. Univ. Ukr., Kyiv, UA) [1520]

H3.8 12.30 Drying of liquid and pasty products in a modified spouted bed of inert particles. **V. E. Kutsakova** (State Acad. Refrig. Food Technol., St. Petersburg, RU) [1113]

H4 Lectures – Tuesday afternoon PRES 2004

Drying

Chairpersons: **S. Cenkowski, S. Tarasiewicz**

H4.1 14.00 Keynote lecture: Microwave drying of porous materials. **A. Koziol, *M. Araszewicz, A. Oskwarek, M. Lupinski** (Tech. Univ., Wroclaw, PL) [1417]

H4.2 14.40 Modeling of diffusion in ellipsoidal solids: a simplified approach to solving some drying problems. ***Z. Y. Li, J. S. Ye** (Tanjin Univ. Sci. Technol., CN) [1133]

H4.3 15.00 Energy-saving mode of drying for vegetative materials. **Y. F. Snezhkin, L. A. Boryak, V. N. Marchevsky¹, *A. O. Seminsky¹** (Inst. Eng. Thermophys., Kyiv, UA; ¹Nat. Tech. Univ., Kyiv, UA) [1000]

15.20 Coffee break, poster session

H4.4 16.00 Keynote lecture: Applications of MATLAB-based software to drying simulation. ***D.-C. Wang, D.-S. Fon¹** (De Lin Inst. Technol., Tu-Chen, TW; ¹Nat. Taiwan Univ., Taipei, TW) [1402]

H4.5 16.40 Modelling of carrot drying using a quasi-stationary method. **M. Zielinska, T. Bialobrzewski, M. Markowski** (Univ. Warmia Mazury, Olsztyn, PL) [1635]

H4.6 17.00 Spray drying of tomato pulp: Effect of feed concentration. **A. M. Goula, K. G. Adamopoulos** (Aristotle Univ. Thessaloniki, GR) [1639]

H4.7 17.20 Thermal dewatering of residual sludge: modeling and simulation. **D. Mihoubi, J. Vaxelaire¹, F. Zagrouba, A. Bellagi²** (INRST, Hammam-Lif, TN; ¹ENSGTI, Pau, FR; ²Ec. Nat. Ing., Monastir, TN) [137]

H4.8 17.40 Drying of clay: modeling of the thermo-hydro-viscoelastic behavior and experiments. **S. Chemkhi, F. Zagrouba, W. Jomaa¹, J. R. Puiggali¹, A. Bellagi²** (INRST, Hammam Lif, TN; ¹ENSAM, Talence, FR; ²ENIM, Monastir, TN) [99]

H5 Lectures – Wednesday morning PRES 2004

Integrated & advanced design

Chairpersons: **D. Kukulka, K. Urbanec**

H5.1 8.50 Keynote lecture: Multicomponent separation by heat-integrated distillation column (HIDiC). **K. Iwakabe, M. Nakaiwa, K. Huang, T. Nakanishi¹, Y. Zhu, A. Rosjorde², T. Ohmori, A. Endo, T. Yamamoto** (Nat. Inst. Adv. Ind. Sci. Technol., Ibaraki, JP; ¹Kimura Chemical Plant, Hyogo, JP; ²Norwegian Univ. Sci. Technol., Trondheim, NO) [650]

H5.2 9.30 Pinch analysis based conceptual design of heat-integrated distillation columns. **Z. Olujic, M. A. Gadalla, L. Sun, A. de Rijke, P. J. Jansens** (Delft Univ. Technol., NL) [676]

H5.3 9.50 Process synthesis as a means for technology development. **L. Halasz, A. Niederl¹, M. Narodoslawsky¹** (Univ. Veszprem, HU; ²Graz Univ. Technol., AT) [693]

10.10 Coffee break

H5.4 10.50 PRES Plenary: Most frequently used heat exchangers from pioneering research to applications worldwide. **B. I. Master, K. S. Chunangad, B. Boxma¹, D. Kral², P. Stehlik³** (ABB Lummus Heat Transfer, Bloomfield NJ, US; ¹ABB Lummus Heat Transfer, The Hague, NL; ²Tenza Inc., Brno, CZ; ³Brno Univ. Technol., CZ) [1459]

H5.5 11.30 Keynote lecture: Reducing CO₂ emissions in heat-integrated distillation systems. **M. A. Gadalla, A. de Rijke, Z. Olujic, P. J. Jansens, M. Jobson¹, R. Smith¹** (Delft Univ. Technol., NL; ¹UMIST, Manchester, UK) [703]

H5.6 12.10 Mathematical modeling and optimization of hydrogen storage in metal hydride beds. **M. Georgiadis, E. Kikkinides¹, S. Athanasios²** (Imperial Coll. London, UK; ¹Aristotle Univ., Thessaloniki, GR; ²Nat. Cent. Sci. Res Demokritos, Athens, GR) [384]

H5.7 12.30 Conceptual design of radiant chamber and preliminary optimisation of process tubular furnace. **Z. Jegla** (Brno Univ. Technol., CZ) [226]

H6 Lectures – Wednesday afternoon PRES 2004

Integrated & advanced design

Chairpersons: **M. Georgiadis, V. Plesu**

H6.1 14.00 Keynote lecture: Transient evaluation of process surfaces used in fouling applications. **D. J. Kukulka, M. Devgun** (State Univ New York, Buffalo NY, US) [558]

H6.2 14.40 Development of a method for analysing energy, environmental and economic efficiency for an integrated steel plant. **M. Larsson, C. Wang, J. Dahl** (Lulea Univ. Technol., SE) [1193]

H6.3 15.00 The plate heat exchangers for high duties. **L. L. Tovazhnyanskiy, P. O. Kapustenko¹, O. Perevertaylenko¹, O. P. Arsenyeva¹** (Nat. Tech. Univ., Kharkiv, UA; ¹SODRUGESTVO, Kharkiv, UA) [824]

15.20 Coffee break, poster session

H6.4 16.00 Keynote lecture: Alternative design approach for multipass and multi-stream plate heat exchangers for use in heat recovery systems. **M. Picón-Núñez, J. L. López-Robles, C. Miranda-Alvarez** (Univ. Guanajuato, MX) [1078]

H6.5 16.40 Application of twisted tube heat exchangers technology in plants capacity up-rating. **J. Lutchá, B. Ljubicic¹** (Koch-Glitsch-Cee, Brno, CZ; ¹Brown Finetube, Koch-Glitsch, Dudelange, LU) [1033]

H6.6 17.00 Optimal batch process design and operation under uncertainty. **H. Arellano-Garcia, M. Wendt, P. Li, G. Wozny** (Tech. Univ. Berlin, DE) [662]

H6.7 17.20 Metaheuristic multiobjective optimization approach for the scheduling of multiproduct plants. **A. Bonfill, M. J. Arbiza, J. Cantón, G. Guillén, F. D. Mele, A. Espuna, L. Puigjaner** (Univ. Polit. Catal., Barcelona, ES) [806]

H6.8 17.40 Heat integration of multipurpose batch plants using a continuous-time framework. **T. Majoji** (Univ. Pretoria, ZA) [1025]

H7 Lectures – Thursday morning PRES 2004

Industrial application & optimal design

Chairpersons: **E. Kenig, T. Majoji**

H7.1 8.50 Keynote lecture: An integrated multiobjective design tool for pulp and paper process design. **J. Manninen, J. Hakanen¹, S. Kajaluoto, J. Hakala** (VT Processes, Jyväskylä, FI; ¹Univ. Jyväskylä, FI) [261]

H7.2 9.30 Investigation of energy and feedstock saving production of isoparaffin fractions. **J. Hancsók, S. Magyar, L. Keresztury, K. V. S. Nguyen, D. Kalló¹** (Univ. Veszprem, HU; ¹Hung. Acad. Sci., Budapest, HU) [1453]

H7.3 9.50 MOSAIC, a web-based approach to chemical process modeling. **R. Zerry, G. Wozny** (Tech. Univ. Berlin, DE) [1162]

10.10 Coffee break

H7.4 10.50 PRES Plenary: Utilising renewable resources economically - new challenges and chances for process development. **M. Narodoslawsky, A. Niederl, L. Halasz¹** (Tech. Univ., Graz, AT; ¹Univ. Veszprem, HU) [1494]

H7.5 **11.30 Keynote lecture:** Challenge for industrial, building and residential heat pumps. **B. Thonon** (Greth, Grenoble, FR) [1052]

H7.6 **12.10** A heat piloted residential 5 kW fuel cell. ***J. L. Lilien, F. Maréchal¹, S. Lerson, N. Pochet** (Univ. Liege, BE; ¹Ec. Polytech. Fed. Lausanne, CH) [1254]

H7.7 **12.30** Analysis of integrated flowsheets for biotechnological production of fuel ethanol. ***C. A. Cardona, O. J. Sánchez*** (Nat. Univ. Colombia, Manizales, CO; ¹Univ. Caldas, CO) [463]

H7.8 **12.50** Feasibility and efficiency of CO₂ sorption-enhanced hydrogen production from bio-oil for PEM fuel cells. ***P. N. Kehagiopoulos, A. A. Iordanidis, S. S. Voutetakis, I. A. Vasalos** (LEFH, Thermi, GR) [1552]

H8 Lectures – Thursday afternoon PRES 2004

Energy saving technology

Chairpersons: **B. Thonon, J. Manninen**

H8.1 **14.00 Keynote lecture:** Structural optimisation of distributed energy systems. ***J. Söderman, F. Petterson** (Abo Akad. Univ., FI) [271]

H8.2 **14.40** Audit for energy savings in sites with chemical processes. **V. Václavek** (Inst. Chem. Technol., Praha, CZ) [1274]

H8.3 **15.00** Future directions of integrated distillation-permeation processes. ***T. Brinkmann, K. Ebert, K. Ohlrogge, A. Wenzlaff** (GKSS Forschungszentrum Geesthacht, DE) [1519]

15.20 Coffee break, poster session

H8.4 **16.00 Keynote lecture:** Chemical and process integration: Synergies from co-production of power and chemicals from natural gas, with CO₂-capture. ***K. H. Kaggerud, T. Gundersen** (Norwegian Univ. Sci. Technol., Trondheim, NO) [342]

H8.5 **16.40** Chemical reactors energy integration applied to SCWO. ***E. D. Lavric, H. Weyten¹, J. De Ruycq, V. Plesu², V. Lavric²** (Vrije Univ., Bruxelles, BE; ¹Vlaamse Instel. Technol. Onder., Mol, BE; ²Univ. Politehnica, Bucuresti, RO) [253]

H8.6 **17.00** Process intensification pathways in the treatment of incinerator flue gases. ***D. Fino, N. Russo, G. Saracco, V. Specchia** (Politech. Torino, IT) [692]

H8.7 **17.20** Unified approach for determining multiple flux distributions and pathways: maximization of acetate production. ***D.-Y. Lee, L. T. Fan¹, S. Park, S. Y. Lee, S. Shafie¹, B. Bertók², F. Friedler²** (KAIST, Daejeon, KR; ¹Kansas State Univ., Manhattan KS, US; ²Univ. Veszprem, HU) [914]

H8.8 **17.40** Energy Level Composite Curves - a new graphical methodology for the integration of energy intensive processes. ***R. Anantharaman, S. O. Abbas, T. Gundersen** (Norwegian Univ. Sci. Technol., Trondheim, NO) [1610]

H8.9 **18.00** Pinch analysis - a tool for energy management within and across industrial plants. **V. Iacob, *D. C. Popescu, I. Ivanescu¹, V. Plesu²** (PETROM, Ploiesti, RO; ¹PETROM, Bucuresti, RO; ²Univ. Politehnica, Bucuresti, RO) [329]

11 Lectures – Monday morning Symposium on food processing and technology

Chairperson: **B. M. McKenna**

I1.1 **8.30 Keynote lecture:** The impact of food processing on quality. **P. Nesvadba** (Robert Gordon Univ., Aberdeen, UK) [1438]

I1.2 **9.10** The drying of food pastes - sugar cane, gum Arabic and maltodextrin solutions - and the glass transition phenomenon. ***F. P. Collares, J. R. D. Finzer, T. G. Kieckbusch** (UNICAMP, Campinas, BR) [751]

I1.3 **9.30** Interactions between sugars and adsorbents to improve sugar separations. ***J. A. Vente, H. Bosch, A. B. de Haan, P. J. T. Bussmann¹** (Univ. Twente, Enschede, NL; ¹TNO Env. Energ. Proc. Innov., Apeldoorn, NL) [429]

9.50 Coffee break, plenary lecture

I1.4 **11.10 Keynote lecture:** Development of a mathematical model for vacuum cooling of cooked meats. ***D.-W. Sun, L. Wang** (Nat. Univ. Ireland, Dublin, IE) [140]

I1.5 **11.50** Computer vision method for monitoring of the changes of cheese texture. ***T. Jeliński, J. Sadowska, G. Tobota, J. Fornal** (Polish Acad. Sci., Olaszyn, PL) [499]

I1.6 **12.10** Visualisation of a boiling process in a plate evaporator. **P. Hoffman** (Czech Tech. Univ., Praha, CZ) [182]

12 Lectures – Monday afternoon Symposium on food processing and technology

Chairperson: **D. W. Sun**

I2.1 **14.00 Keynote lecture:** High pressure and foods. ***M. Houška, J. Strohalm, K. Kocurová¹, J. Totušek², J. Triška³, N. Vrchotová³, D. Gabrovská, I. Paulíčková** (Food Res. Inst., Praha, CZ; ¹Beskyd. Fryčovice, CZ; ²Masaryk Univ., Brno, CZ; ³Inst. Landscape Ecol., České Budějovice, CZ) [149]

I2.2 **14.40** High yield process for the production of carrot juice. ***G. Di Giacomo, L. Aloisio¹, G. Del Re, E. Martinez de la Ossa²** (Univ. l'Aquila, IT; ¹CRAB, Avezzano, IT; ²Univ. Cadiz, ES) [1324]

I2.3 **15.00** Combined concentration process for thermally sensitive liquids. **M. H. Nguyen** (Univ. W. Sydney, AU) [284]

15.20 Coffee break, poster session

I2.4 **16.00** Selective adsorbents for triglycine recovery from multicomponent process streams. ***R. Wijnje, H. Bosch, A. B. de Haan, P. J. T. Bussmann¹** (Univ. Twente, Enschede, NL; ¹TNO-MEP Apeldoorn, NL) [818]

I2.5 **16.20** Physical methods for monitoring the quality of oil in deep fat frying. ***P. Nesvadba, M. Allais¹** (Robert Gordon Univ., Aberdeen, UK; ¹INSFA, Rennes, FR) [1436]

12.6 16.40 Database of the properties of sucrose, sucrose solution and food. **Z. Bubnik**, ***S. Henke**, **P. Kadlec**, **A. Hinková**, **V. Pour** (Inst. Chem. Technol., Praha, CZ) [272]

12.7 17.00 Adsorption of beta-galactosidase and hydrolysis of lactose in a fluidized bed of zeolite pellets. **G. Cifarelli**, **P. Parascandola**, ***M. Poletto**, **I. Saracino** (Univ. Salerno, Fisciano, IT) [893]

12.8 17.20 Computer modelling of grain drying. ***A. Aboltins**, **E. Berzins** (Latvia Univ. Agric., Jelgava, LV) [260]

13 Lectures – Tuesday morning Symposium on food processing and technology

Chairperson: P. Nesvadba

13.1 8.30 Keynote lecture: Advances in radio frequency and ohmic heating of foods. ***B. M. McKenna**, **J. Lyng**, **N. Brunton**, **N. Shirat** (Nat. Univ. Ireland, Dublin, IE) [1070]

13.2 9.10 Kinetics of brewing yeast accumulation on the surface of spent grains: A biocatalyst for brewing application. ***T. Brányik**, **A. Vicente**, **G. Kuncová**¹, **O. Podrazky**¹, **J. Teixeira** (Univ. Minho, Braga, PT; ¹Inst. Chem. Proc. Fundam., Praha, CZ) [232]

13.3 9.30 Advancing dairy whey in the chain value by fermentation/separation processes. **J. Parrondo**, **A. Laca**, **M. Herrero**, **L. A. García**, ***M. Díaz** (Univ. Oviedo, ES) [457]

9.50 Coffee break, plenary lecture

13.4 11.10 Inactivation of *Bacillus stearotherophilus* spores during thermal processing of media. ***J. Iciek**, **A. Papiewska**, **M. Molska** (Tech. Univ. Lodz, PL) [377]

13.5 11.30 Sloughing of potatoes cultivated under different conditions. ***A. Hejlová**, **J. Blahovec**, **J. Vacek**¹ (Czech Univ. Agric., Praha, CZ; ¹Potato Res. Inst., Havlíčkův Brod, CZ) [256]

13.6 11.50 Evolution of the density and the rheological behaviour of potato during convective drying. ***S. Chemkhi**, **F. Zagrouba**, **A. Bellagi**¹ (INRST, Hammam-Lif, TN; ¹Ec. Nat. Ing., Monastir, TN) [124]

13.7 12.10 Changes in structure and density of potato during free convection drying. ***M. S. Hatamipour**, **H. Hadjizakemi** (Isfahan Univ., IR) [1377]

14 Lectures – Tuesday afternoon Symposium on odour control and measurement

Chairperson: P. Auterská

14.1 14.00 Quality management for olfactometry. **D. Mannebeck** (ECOMA, Honigsee, DE) [1328]

14.2 14.20 Abatement of odorous gas emissions: from sampling and analysis to a pilot-scale application. ***S. A. Ojala**, **U. M. Lassi**¹, **R.-L. Keiski** (Univ. Oulu, FI; ¹Cent. Ostrobothnia Polytech., Kokkola, FI) [453]

14.3 14.40 Round robin test olfactometry 2003. ***B. Maxeiner**, **D. Mannebeck** (OLFATEC, Honigsee, DE) [1331]

14.4 15.00 Degradation of isobutyraldehyde and its intermediates in a compost biofilter. ***B. Sercu**, **K. Demeestere**, **H. Baillieu**, **W. Verstraete**, **H. Van Langenhove** (Ghent Univ., BE) [480]

15.20 Coffee break, poster session

14.5 16.00 Model studies of odour removal and decolorization on modified activated carbon. ***Z. Sarbak**, **M. Szczygiór** (A. Mickiewicz Univ., Poznan, PL) [152]

14.6 16.20 Landfill gas modelling and risk assessment in the purpose of the good managing in municipal landfill of Novi Sad. ***G. Vujic**, **M. Vojinovic-Miloradov**, **D. Basic**, **D. Ubavin**, **B. Vujic**¹, **G. Cabradi**², **B. Tomasevic** (Univ. Novi Sad, YU; ¹Exec. Council. Vovjodina, Novi Sad, YU; ²Cistoca, Novi Sad, YU) [616]

14.7 16.40 GIS-based landfill monitoring by means of dedicated biosensors. ***F. A. Batzas**, **C. G. Siontorou** (Univ. Piraeus, GR) [1220]

15 Lectures – Wednesday morning Symposium on environmental engineering

Chairpersons: H. Hofbauer, M. Punčochář

15.1 8.30 Keynote lecture: Biomass gasification - a promising route for the future. **H. Hofbauer** (Vienna Univ. Technol., Wien, AT) [1207]

15.2 9.10 Exergetic and energetic evaluation of biomass based IGCC processes. ***M. Bolhar-Nordenkampf**, **S. Fürsinn**, **H. Hofbauer** (Vienna Univ. Technol., Wien, AT) [868]

15.4 9.30 Anaerobic treatment of chemical industry effluents. ***W. Driessen**, **P. Yspeert**, **A. Engelaar** (Paques BV, Balk, NL) [1191]

15.5 9.50 Analysis of the use of collagen fibrils to accelerate the dewatering of sludge. **M. A. Seltzer**, **J. E. Mulato**, **C. Tilara**, ***G. J. Maffia** (Widener Univ., Chester PA, US) [1124]

10.10 Coffee break

15.6 10.50 Effects of water content of packings on the removal efficiency and performance of biofilters treating hydrophobic compounds with emphasis on alpha-pinene. ***M. B. Bagherpour**, **M. Nikazar**, **M. Sanati**¹ (Tehran Polytech. Univ., IR; ¹Vaxjo Univ., SE) [547]

15.7 11.10 Biosorption of Cr(VI) and Cd(II) using bacterial biomass. ***M. Ziagova**, **D. Aslanidou**, **X. Papaioannou**, **E. Dimitriadou**, **M. Liakopoulou-Kyriakides** (Aristotle Univ., Thessaloniki, GR) [1604]

15.9 11.30 Removal of heavy metal ions from industrial wastewater by sulphureted hydrogen water. **W. K. Lafi** (Al-Balqa Appl. Univ., Amman, JO) [1586]

15.10 11.50 Industrial pilot-scale pretreatment effectively reduced toxicity of wastewater from synthetic resin production. **J. Zagorc-Končan**, ***A. Žgajnar-Gotvajn** (Univ. Ljubljana, SI) [1712]

15.11 12.10 Determination and bioremediation of petroleum pollutant in the Persian Gulf coast. ***M. Vossughi**, **P. Moselehi**, **I. Alemzadeh** (Sharif Univ. Technol., Tehran, IR) [1279]

16 Lectures – Wednesday afternoon Symposium on environmental engineering

Chairpersons: **A. Thompson, M. Puncóchár**

16.1 14.00 Keynote lecture: The fate and removal of pharmaceuticals during sewage treatment. ***A. Thompson, G. Winkler, P. Griffin¹, R. Stuetz², E. Cartmell** (Crainfield Univ., Bedfordshire, UK; ¹Severn Trent Water Ltd., Coventry, UK; ²Univ. New So. Wales, Sydney, AU) [372]

16.2 14.40 Biotreatability characterization of municipal landfill leachate from an old landfill using multilevel approach. ***A. Žgajnar-Gotvajn, J. Zagorc-Končan** (Univ. Ljubljana, SI) [786]

16.3 15.00 In-situ soil remediation by bio-venting. **K. Everaert, *J. Baeyens¹** (Energy CA, Bruxelles, BE; ¹Univ. Antwerpen, BE) [594]

15.20 Coffee break, poster session

16.4 16.00 Monoxenic liquid production of the bioinsecticide nematode *Steinernema carpocapsae* using a culture medium containing acid whey. **J.-J. Espino-García, J. Batalla-Mayoral, A.-I. Rodríguez-Hernandez, *N. Chavarría-Hernández** (Univ. Aut. Estado de Hidalgo, Tulancingo, MX) [855]

16.5 16.20 Kinetic modelling of *Xenorhabdus nematophilus* growing in a liquid medium based on agumiel from Mexican maguey-pulquero (*Agave* spp.). **M. R. Lopez-Cuellar, A.-I. Rodríguez-Hernandez, *N. Chavarría-Hernández** (Univ. Auton. Est. Hidalgo, Tulancingo, MX) [1223]

16.6 16.40 Parameters affecting performance of biofilters treating hydrophobic and hydrophilic volatile organic compounds from contaminated air streams. ***M. B. Bagherpour, M. Nikazar¹, M. Sanati, B. Bonakdarpour¹** (Vrjixj Univ., SE; ¹Tehran Polytech. Univ., IR) [669]

16.7 17.00 Benzene, toluene and xylene (BTX) biodegradation in aqueous solution and gaseous phase. ***S. Yaghmaei, A. Mesgari Shadi** (Sharif Univ. Technol., Tehran, IR) [478]

16.8 17.20 Non-thermal plasma treatment of automotive exhaust gases. ***M. Rezaei, A. Taeb** (Iran Univ. Sci. Technol., Tehran, IR) [1584]

16.9 17.40 Laboratory research of wet FGD and mathematical modelling. ***P. Machač, V. Krystl, P. Chalupa** (Inst. Chem. Technol., Praha, CZ) [1673]

17 Lectures – Thursday morning Symposium on environmental engineering

Chairpersons: **E. Neyens, G. J. Maffia**

17.1 8.30 Fenton peroxidation influences the drying performance of waste activated sludge. ***E. Neyens, J. Baeyens¹, R. Devil¹, B. De heyder** (Aquafin, Aartselaar, BE; ¹Univ. Antwerp, BE) [8]

17.2 8.50 The use of ultrasound techniques in wastewater treatment. **E. Neyens, *J. Baeyens¹, M. Weemaes** (Aquafin, Aartselaar, BE; ¹Univ. Antwerp, BE) [9]

17.3 9.10 Advanced chemical oxidation of textile dye acid red 14 in water by fenton and photo-fenton processes. ***N. Daneshvar, A. R. Khataee** (Univ. Tabriz, IR) [985]

17.4 9.30 Energy saving waste water treatment by evaporation. **T. Balázs, K. Both, *L. Tomösy** (Budapest Univ. Technol. Econ., HU) [956]

17.5 9.50 Oil emulsion treatment optimization using design of experiments methodology. ***G. Alekxic, L. V. Rajakovic¹, P. Jovanic², Z. Lazic²** (CIP Inst. Transp., Beograd, YU; ¹ITNMS, Beograd, YU; ²Lenzing Fibers Corp., Lowland TN, US) [880]

10.10 Coffee break

17.6 10.50 Application of sorbent materials for oil spill cleanup. ***S. Aghamiri, A. Bayat¹, A. Mohab¹** (Univ. Isfahan, IR; ¹Isfahan Univ. Technol., IR) [997]

17.7 11.10 Studies of diesel-contaminated soil remediation using microemulsions and surfactant solutions. ***A. A. Dantas Neto, T. N. Castro Dantas, F. S. H. T. Pinheiro, V. S. Araújo, M. C. P. A. Moura** (UFRN, Natal, BR) [729]

17.8 11.30 Water quality control and closing up of water systems in the pulp & paper industry. ***D. B. Zarkovic, L. V. Rajakovic¹, M. Krgovic¹, N. Acevski²** (High Polytech. Sch., Beograd, YU; ¹Fac. Technol. Metall., Beograd, YU; ²Board Factory, Umka, YU) [859]

17.9 11.50 Landfill Gas (LFG) utilization: how to optimise it vs. the influence of meteorological parameters?. ***M. Meres, K. Szafnicki, P. Formisyn, E. Szczepaniec-Giściak¹** (ENSM, Saint-Etienne, FR; ¹Jagellonian Univ., Krakow, PL) [1428]

17.10 12.10 Environmental impact minimization in paper and corrugated board industry. ***L. Arslan, S. Cesur¹** (KOSGEB, Izmir, TR; ¹Ege Univ., Izmir, TR) [1106]

17.11 12.30 Effect of dissolved oxygen level on degradation of waste whey under thermophilic conditions. ***A. Fatmawati, M. R. Kosseva¹, C. A. Kent¹** (Univ. Surabaya, ID; ¹Univ. Birmingham, UK) [1364]

18 Lectures – Thursday afternoon Symposium on environmental engineering

Chairpersons: **I. Holoubek, J. Derco**

18.1 14.00 Keynote lecture: The case of persistent, bioaccumulative and toxic compounds (PBTs) in the environment. **I. Holoubek** (Recetox-Toxoen&Assoc., Brno, CZ) [1101]

18.2 14.40 PAH diffusion from coal tar particles sampled from a contaminated soil. **K. Benhabib, *M.-O. Simonnot, J. C. Appert-Collin, M. Sardin** (CNRS INPL, Nancy, FR) [411]

18.3 15.00 Rhizospheric processes controlling PAH phytoremediation. ***S. Ouvrard, J.-L. Morel** (ENSAIA-INPL, Vandoeuvre-Les-Nancy, FR) [422]

15.20 Coffee break, poster session

18.4 16.00 Treatment of resistant organic pollutants by ozone. ***J. Derco, L. Mitalová** (Slovak Univ. Technol., Bratislava, SK) [858]

18.5 16.20 Recovery of metallic zinc from ZnO fly dust. ***P. Dvořák, J. Jandová, V. Jiříčný¹** (Inst. Chem. Technol., Praha, CZ; ¹Inst. Chem. Proc. Fundam., Praha, CZ) [330]

18.6 16.40 The use of wet air oxidation to destroy neutralized chemical warfare material. ***C. Maugans, J. Bettinger¹, B. Adams², E. Doyle²** (US Filter Zimpro Systems, US; ¹Shaw Environmental, US; ²US Army Non-Stockpile Chem. Mat. Progr., US) [1240]

18.7 17.00 Wet oxidation of acrylic acid over a CuO-ZnO/Al₂O₃ catalyst. **A. M. T. Silva, *R. M. Quinta-Ferreira** (Univ. Coimbra, PT) [828]

18.8 17.20 Study of carbon dioxide utilization by pressure swing adsorption reactor. **C.-Y. Chen, *C.-T. Chou** (Nat. Cent. Univ., Chung-Li, TW) [731]

18.9 17.40 Removal of persistent organic pollutants in petrochemical wastewaters of Iran. **M. Ghaheri** (IROST, Tehran, IR) [6]

J

J1 Lectures – Monday morning Symposium on safety in chemical industry

Chairpersons: **F. Babinec, J. Škarka**

J1.1 11.10 Model aided optimisation of batch exothermic catalysed reactions using on-line reaction calorimetry. **J. Horák** (Inst. Chem. Technol., Praha, CZ) [1326]

J1.2 11.30 Characterisation of pressure and temperature rise of run-away reactions using temperature-programmed measurements. **P. Reuse, H. Fierz** (Swiss Inst. Promot. Safety Secur., Basel, CH) [510]

J1.3 11.50 Safety aspects of the scale-up of an organic peroxide synthesis. **T. Saeger, J. Steinbach**¹ (¹Tech. Univ., Berlin, DE) [157]

J1.4 12.10 Thermokinetic evaluation of an esterification reaction in semibatch mode. **M. Bundschuh, A.-M. Krockner, J. Steinbach** (Tech. Univ., Berlin, DE) [162]

J2 Lectures – Monday afternoon Symposium on safety in chemical industry

Chairperson: **J. Horák**

J2.1 14.00 Dispersion of dangerous gases modeled by CFD approach. **M. Kiša, O. Mierka Jr., L. Jelemský, J. Stopka, J. Markoš** (Slovak Univ. Technol., Bratislava, SK) [927]

J2.2 14.20 Safety analyses of a tubular flow reactor. **M. Krajčiová, L. Jelemský, A. Molnár, J. Markoš** (Slovak Univ. Technol., Bratislava, SK) [925]

J2.3 14.40 A reaction calorimeter and calorimetric tools for safety testing on a laboratory scale. **R. Naumann, C. Mathonat, R. André** (Setaram Instr., Caluire, FR) [1441]

J2.4 15.00 Effective HAZOP studies in the hydrocarbon processing industry. **B. K. Bharatiya** (Saudi Arabian Oil Co., Riyadh, SA) [943]

15.20 Coffee break, poster session

J2.6 16.00 Safety considerations in the design of LPG pressure storage vessels. **B. K. Bharatiya, F. Mubaddel**¹ (Riyadh Area Loss Prevent. Divn., Riyadh, SA; ¹King Saud Univ., Riyadh, SA) [1590]

J2.7 16.20 On the last major accidents in Czech Republic. **F. Babinec** (Brno Univ. Technol., CZ) [1749]

J3 Lectures – Tuesday morning Symposium on progress in chemical technology and product engineering

Chemical technology

Chairpersons: **H. Kittel, J. Škarka**

J3.1 8.30 **Keynote lecture:** Hydrocracking versus fluid catalytic cracking for production of clean fuels. **H. Kittel, P. Pelant** (Czech Refin. Co., Kralupy/Vlt., CZ) [1222]

J3.2 9.10 Determination of the optimal structure of petrochemical complex in Serbia. **D. U. Skala, A. M. Olrovc** (Fac. Technol. Metall., Beograd, YU) [1126]

J3.3 9.30 Experimental and sensitivity analysis of a thermal cracking pilot plant for the pyrolysis of hydrocarbons. **A. Niaei, J. Towfighi¹, M. Sadrameli¹, M. E. Masoumi¹** (Tabriz Univ., IR; ¹Tarbiat Modares Univ., Tehran, IR) [1182]

9.50 Coffee break, plenary lecture

J3.4 11.10 Complex processing of produced waters of gas fields of Russia. **R. M. Minigulov, A. G. Ban¹, E. V. Pisarenko², V. A. Mozgunov², V. N. Pisarenko²** (Yamburggadobicha, Novii Urengoi, RU; ¹ZAO Sintop, Moskva, RU; ²Mendelev Univ. Chem. Technol., Moskva, RU) [496]

J3.5 11.30 The effect of microwave irradiation on the esterification of propionic acid with ethyl alcohol in a single-mode microwave loop reactor. **B. Toukonniitty, J.-P. Mikkola, K. Erinen, T. Salmi, D. Y. Murzin** (Abo Akad. Univ., FI) [428]

J3.6 11.50 Methanol production from low pressure natural gas of gas fields of Russia. **E. V. Pisarenko, A. G. Ban¹, V. N. Pisarenko, N. A. Nikitina** (Mendelev Univ. Chem. Technol., Moskva, RU; ¹ZAO Sintop, Moskva, RU) [632]

J3.7 12.10 Modeling and optimization of the continuous vulcanization process. **V. Kosar, Z. Gomzi, K. Sintić**¹ (Univ. Zagreb, HR; ¹ELKA, Zagreb, HR) [638]

J4 Lectures – Tuesday afternoon Symposium on progress in chemical technology and product engineering

Chemical technology

Chairpersons: **P. L. Silveston, A. Allahverdi**

J4.1 14.00 **Keynote lecture:** Production of sulfuric acid or organicsulfonates using a cyclic process with an activated carbon catalyst and supercritical carbon dioxide as an extractant. **P. L. Silveston, A. Lohi, R. R. Hudgins, E. Croiset, W. Napapan, S. Rapatplan** (Univ. Waterloo, Ont., CA) [1404]

J4.2 14.40 Prospectives for preparation of activated carbon from Maghara coal. **H. A. Talaat, M. H. Sorour, A. M. G. Abulnour, H. H. Shaarawy** (Nat. Res. Cent., Cairo, EG) [122]

J4.3 15.00 Shungite filler of composite materials. **S. V. Yefremova, B. Y. Kolesnikov** (Al-Farabi Kaz. Nat. Univ., Almaty, KZ) [32]

15.20 Coffee break, poster session

J6 Lectures – Wednesday afternoon
Symposium on progress in chemical technology and product engineering

J4.4 16.00 Development of an acid resistant geopolymeric cement. ***A. Allahverdi**, **F. Škvara**¹ (Iran. Univ. Sci. Technol., Tehran, IR; ¹Inst. Chem. Technol., Praha, CZ) [529]

J4.5 16.20 The technology of obtaining of carbon-quartzite briquettes for thermal-electric processes and carbon-mineral sorbents. **S. A. Yefremov**, ***M. K. Nauryzbaev**, **S. V. Yefremova** (Al-Farabi Kaz. Nat. Univ., Almaty, KZ) [35]

J4.6 16.40 Molecular simulation of paper tear characteristics using finite element method with a "fiber block model". ***T. Honda**, **K. Yachida** (Jap. Adv. Inst. Sci. Technol., Ishikawa, JP) [715]

Biotechnology

Chairpersons: E. Kozliak, A. M. Gerrard

J6.1 14.00 Degradation of herbicides in soil and water. ***H.-P. Schmauder**, **K. Schlüter**, **M. Fricke**¹, **J. Paca**² (FZMB, Bad Langensalza, DE; ¹IMG, Nordhausen, DE; ²Inst. Chem. Technol., Praha, CZ) [515]

J6.2 14.20 Aerobic biodegradation of nitrophenols in aqueous solution by a mixed culture. ***A. Kosteckova**, **Z. Pronayova**, **J. Paca**, Jr. ¹, **J. Paca**, **E. Kozliak**² (Inst. Chem. Technol., Praha, CZ; ¹Charles Univ., Praha, CZ; ²Univ. N. Dakota, Grand Forks ND, US) [249]

J6.3 14.40 Aerobic biodegradation of nitroaromatics in aqueous solution by a mixed culture in batch and continuous systems. ***J. Barta**, **J. Paca**, **R. Bajpai**¹, **H.-P. Schmauder**² (Inst. Chem. Technol., Praha, CZ; ¹Univ. Missouri, Columbia MO, US; ²FZMB, Bad Langensalza, DE) [248]

J6.4 15.00 Remediation of 2,6-dinitrotoluene in common building materials: wood and concrete. ***E. Kozliak**, **T. Sundstrom**, **W. Seames**, **S. Phutane**, **N. Jalan**, **J. Paca**¹ (Univ. N. Dakota, Grand Forks ND, US; ¹Inst. Chem. Technol., Praha, CZ) [704]

15.20 Coffee break, poster session

J6.5 16.00 Optimal design of adsorption tower equipped with a novel packed biomass bed for colouring-processes-wastewater treatment. ***F. A. Batzias**, **D. K. Sidiras** (Univ. Piraeus, GR) [356]

J6.6 16.20 Optimization of the production of fumaric acid by solid state fermentation using citrus pulp as support and nutrients source. ***G. A. Moreira**, **A. L. Woiciechowski**, **C. R. Soccol**, **J. Paca**¹ (Univ. Fed. Parana, Curitiba, BR; ¹Inst. Chem. Technol., Praha, CZ) [666]

J6.7 16.40 Decomposition of natural gas by thermal anoxic processes. ***F. Straka**, **J. Paca**, Jr. ¹, **M. Kuntárová**, **M. Musilová** (Fuel Res. Inst., Běchovice, CZ; ¹Charles Univ., Praha, CZ) [1418]

J6.8 17.00 Biosorption of copper (II) by mixed culture of *Aureobasidium Pullulans* and *Arthrobaacter*Sp. in packed bed column. ***P. Srinivas**, **P. Preetha**, **T. Viruthagiri** (Annamalai Univ., Annamalai Nagar, IN) [1320]

J6.9 17.20 Biosorption of copper by *Rhizopus arrhizus* in batch and continuous mode. ***P. Preetha**, **T. Viruthagiri**, **D. Ramesh** (Annamalai Univ., Annamalai Nagar, IN) [1321]

J5 Lectures – Wednesday morning
Symposium on progress in chemical technology and product engineering

Biotechnology

Chairpersons: H. P. Schmauder, J. Paca

J5.1 8.30 Keynote lecture: Bioavailability of substrates in processes of biodegradation and biotransformation. **B. Angelova**, **V. Bejar**¹, **S. Mutafov**, ***H.-P. Schmauder**² (Inst. Microbiol., Sofia, BG; ¹Univ. Granada, ES; ²Res. Cent. Med. Technol. Biotechnol., Bad Langensalza, DE) [479]

J5.2 9.10 Measuring adsorption mass transfer coefficients in sterile biofilter beds. ***A. M. Gerrard**, **O. Misiaczek**¹, **J. Paca**¹, **M. Rossi**¹ (Univ. Teeside, Middlesbrough, UK; ¹Inst. Chem. Technol., Praha, CZ) [10]

J5.3 9.30 Biofiltration of toluene, ethanol, and hexane by a compost bed biofilter. ***A. Čermáková**, **J. Paca**, **R. Auria**¹, **C. R. Soccol**² (Inst. Chem. Technol., Praha, CZ; ¹Univ. Mediterr., Marseille, FR; ²UFPR, Curitiba, BR) [251]

J5.4 9.50 Biofiltration and modelling in the styrene-air system. ***O. Misiaczek**, **A. M. Gerrard**¹, **J. Paca** (Inst. Chem. Technol., Praha, CZ; ¹Univ. Teeside, Middlesbrough, UK) [257]

10.10 Coffee break

J5.5 10.50 Waste gas treatment in biotrickling filter. ***J. Paca**, **E. Klapkova**, **M. Halecky**, **I. Sedlacek**¹, **C. R. Soccol**², **A. M. Gerrard**³ (Inst. Chem. Technol., Praha, CZ; ¹Masaryk Univ., Brno, CZ; ²Univ. Fed. Parana, Curitiba, BR; ³Univ. Teeside, Middlesbrough, UK) [267]

J5.6 11.10 Modelling the bacterial synthesis of cellulose. **A. M. Gerrard**, ***M. Hornung**¹, **H.-P. Schmauder**¹ (Univ. Teeside, Middlesbrough, UK; ¹FZMB, Bad Langensalza, DE) [645]

J5.7 11.30 Kinetic study of *Aspergillus niger* LPB 21 growth in citric acid production by solid-state fermentation of cassava bagasse in semi-pilot scale. **F. C. Prado**, ***C. R. Soccol**, **L. P. S. Vandenberghe**, **A. L. Woiciechowski**, **J. Paca**¹ (UFPR, Curitiba, BR; ¹Inst. Chem. Technol., Praha, CZ) [613]

J5.8 11.50 Constrained dynamic optimization using evolutionary algorithm in activated sludge systems. **S. Balku**, ***R. Berber** (Ankara Univ., TR) [1433]

J5.9 12.10 Modeling the fermentative production of L-glutamic acid by *Corynebacterium glutamicum* MTCC 2745 in a batch bioreactor. ***N. S. Khan**, **I. M. Mishra**, **R. P. Singh** (Indian Inst. Technol., Roorkee, IN) [1286]

POSTERS

P1 Posters – Monday Reaction engineering

- P1.1** Step versus impulse feeding of a fed batch animal cell bioreactor. **V. Lavric, I. D. Ofiteru, A. Woinaroschy** (Univ. Politehnica, Bucuresti, RO) [252]
- P1.2** Empirical modeling of the stability kinetics of veterinary probiotic contains microorganism of the *pediococcus acidilactici* species. **M. Ardjmand, R. Behbehani** (Islamic Azad Univ., Tehran, IR) [551]
- P1.4** Electric field effects on the onset of density instability of an autocatalytic reaction front. **A. Zadrazil, H. Sevcikova** (Inst. Chem. Technol., Praha, CZ) [929]
- P1.5** FTS selectivity enhancement by distributing H₂ along a fixed-bed reactor. **S. Sharifnia, Y. Mortazavi, A.-A. Khodadadi, A. Nazari** (Univ. Tehran, IR) [996]
- P1.6** Low temperature oxidation of CO and hydrocarbons over supported gold catalysts for automotive applications. **S. Ivanova, C. Petit, V. Pitchon** (CNRS-ECMP, Strasbourg, FR) [1442]
- P1.7** Application of dynamic programming method in optimal control and simulation of an industrial naphtha cracker. **J. Towfighi, R. Karimzadeh, A. Niaei¹, G. Saedi** (Tarbiat Modares Univ., Tehran, IR; ¹Tabriz Univ., IR) [1474]
- P1.8** Dynamical response of the pH-oscillatory reaction hydrogen peroxide-thiosulfate-Cu₂⁺ in the CSTR to external pulses. **D. Baks, L. Schreiberová, I. Schreiber** (Inst. Chem. Technol., Praha, CZ) [871]
- P1.9** Conditions of effective catalyst use in gas-liquid processes on solid catalyst. **E. F. Stefglo, I. V. Kuchin, O. P. Zhukova, A. V. Kravtsov** (Inst. Coal & Coal Chem., Kemerovo, RU) [503]
- P1.10** Modeling and simulation of batch acetone-butanol fermentation with immobilized cells of *Clostridium acetobutylicum*. **L. A. R. Sallam, A. H. El-Refai, M. A. El-Zanati, R. F. Allam, M. S. Shafei, O. A. El-Ardi** (Nat. Res. Cent., Cairo, EG) [29]
- P1.11** Kinetical regularities and mechanism of reaction of dehydroalkylation of cyclohexane hydrocarbons with methanol on modified H-ZSM-5. **H. M. Alimardanov, L. A. Tahirova, F. M. Veliyeva** (Inst. Petrochem. Proc., Baku, BO) [45]
- P1.12** Modelling of the oxidative dehydrogenation of alicyclic hydrocarbons to dienes. **A. A. Akhundov, H. M. Alimardanov, F. M. Veliyeva** (Inst. Petrochem. Proc., Baku, AZ) [46]
- P1.14** Kinetics of decomposition of H₂O₂ over oxides of f-metals. **A. Gawdzik, S. Gajda, J. Dziwlik, P. Włodarczyk, T. Mederski, A. Sofronkov** (Univ. Opole, PL) [91]
- P1.15** Effect of the operating conditions on the synthesis of dimethyl ether over Cu₂O-ZnO-Al₂O₃/gamma-Al₂O₃ bifunctional catalysts. **R. Garoña, J. Ereña, J. M. Arandes, A. T. Aguiayo, J. Bilbao** (Univ. Pais Vasco, Bilbao, ES) [104]
- P1.16** Valorization of polystyrene-butadiene/light cycle oil blends over HY zeolites. **J. M. Arandes, J. Ereña, M. J. Azkoiti, I. Torre, J. Bilbao** (Univ. Pais Vasco, Bilbao, ES) [105]
- P1.17** Catalytic decomposition of inorganic peroxide compounds. **E. G. Ippolitov, O. A. Kruglikova¹, Z. N. Kabluchaya¹, M. A. Shlyakhova¹** (Kurnakov Inst. Gen. Inorg. Chem., Moskva, RU; ¹State Pedag. Univ., Moskva, RU) [338]
- P1.18** Circulating reaction zone in a double-bed chemical reactor. **J. Thullie, M. Bodzek** (Silesian Univ. Technol., Gliwice, PL) [340]
- P1.19** Efficiency of reverse flow reactors with interstage injection. **J. Thullie, M. Kurpas** (Silesian Univ. Technol., Gliwice, PL) [345]
- P1.20** Modeling and simulation of gluconic acid production in an internal loop airlift bioreactor. **H. Znad, V. Báles, J. Markoš, Y. Kawase¹** (Slovak Univ. Technol., Bratislava, SK; ¹Toyo Univ., JP) [352]
- P1.21** Cracking and isomerization of petroleum load of the n-hexadecane with aluminosilicates catalysts (Al, Ni, Mo, Co, Zr) presence; application of the "sol-gel" method. **A. Boucenna, O. Zamoum, S. Dekkar, A. Gherbi, I. M. Kolesnikov¹** (Univ. Boumerdes, DZ; ¹Gubkin State Acad. Oil Gas, Moskva, RU) [506]
- P1.22** Determination of the growth kinetics parameters of *Rhizopus delemar* in solid-state fermentation. **C. V. Tagliari, T. T. Franco, J. Paca¹, C. R. Soccol²** (UNICAMP, Campinas, BR; ¹Inst. Chem. Technol., Praha, CZ; ²UFPR, Curitiba, BR) [524]
- P1.23** Minimization of Gibbs free energy using a new algorithm. **M. Goharrokhi, S. Gotbi, M. Torabi, V. Taghikhani** (Islamic Azad Univ., Tehran, IR) [635]
- P1.24** Modeling for kinetic of degradation of aflatoxin B1 in pistachio by radiation and humidity. **M. Ardjmand, M. Mazahery, M. Kazemeini¹** (Islamic Azad Univ., Tehran, IR; ¹Sharif Univ. Technol., Tehran, IR) [639]
- P1.25** Naphtha hydrotreatment reactor model. **J. O. Marroquin de la Rosa, J. J. Valencia Lopez, J. A. Ochoa Tapia¹, T. Viveros Garcia¹** (Inst. Mex. Pet., Mexico, MX; ¹Univ. Aut. Metrop., Mexico, MX) [654]
- P1.26** Protease production from bovine serum albumin fermentation highly affected by oxygen supply. **F. J. Ustáriz, A. Laca, L. A. García, M. Díaz** (Univ. Oviedo, ES) [696]
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- P1.152** Direct resistance heating of copper catalyst in microreactor: features in the reaction of methanol decomposition. **D. V. Andreev, L. L. Makarshin, V. N. Parmon** (Boreskov Inst. Catal., Novosibirsk, RU) [145]
- P1.154** Reconstruction of porous media from electron microscopy images. **V. Nevoral, G. Salejova, J. Kosek, M. Marek** (Inst. Chem. Technol., Praha, CZ) [932]
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- P1.159** Water balance of PEM fuel cell: model and experiment. **S. A. Grigoriev, I. E. Baranov, A. A. Kalinnikov, E. V. Borisova, V. N. Fateev** (Kurchatov Inst., Moskva, RU) [241]
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- P1.164** Electrical conductivity and transport properties of inorganic membranes containing hydrated zirconium dioxide. **Y. Dzyazko, A. Mahmoud¹, F. Lapique¹** (Inst. Gen. Inorg. Chem., Moskva, RU; ¹CNRS ENSIC, Nancy, FR) [981]
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- P1.173** Future of chemical engineering: integrating biology into the ChE curriculum. **P. Mosto, M. J. Savelski, G. B. Hecht, S. Farrell** (Rowan Univ., Glassboro NJ, US) [578]
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- P3.6** The effects of operating conditions on the gas holdup in a multiphase reciprocating plate column with rashig rings placed in interplate spaces. ***M. D. Aleksic, I. B. Bankovic-Ilic¹, M. L. Lazic¹, V. B. Veljkovic¹, D. U. Skala²** (Jun. Coll. Agric. Prokuplje, YU; ¹Univ. Nis, YU; ²Fac. Technol. Metall., Beograd, YU) [755]
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- P3.10** Synthesis and optimization of pressure swing distillation sequences. **A. S. Moussa, *L. Jiménez-Esteller** (Univ. Rovira Vigili, Tarragona, ES) [1373]
- P3.11** Shortcut design of single feed reactive columns: Minimum reflux, optimum reflux and number of plates. **J. Bonet, A. Calvet, *M. Galan, J. Costa, R. Thery¹, X. Meyer¹, M. Meyer¹, V. Gerbaud¹** (Univ. Barcelona, ES; ¹LGC INPT, Toulouse, FR) [409]
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- P3.24** Kinetic study of oil extraction from olive foot cake. **S. Meziane, *H. Kadi, O. Lamrous** (Univ. Mouloud Mammen, Tizi-Ouzou, DZ) [1003]
- P3.25** Ultrasound-assisted extraction of carvone and limonene from caraway seeds. ***S. Chemat, H. Ait-Amar¹, A. Lagha², P. V. Bartels³, F. Chemat⁴** (LAOF, Alger, DZ; ¹Univ. Blida, DZ; ²USTHB, Bab Ezzouar, DZ; ³ATO-DLO, Wageningen, NL; ⁴Univ. Reunion, FR) [37]
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- P3.29** Re(VI) extraction by primary amine from aqueous sulphuric acid solutions. ***D. Schřitřterová, P. Kevovář** (Inst. Chem. Technol., Praha, CZ) [1046]
- P3.30** Metals' removal from aqueous solutions: experimental study and mathematical modelling. **I. Dobre, A. Stoica, *A. Sturzoiu, T. Ofiteru** (Univ. Politehnica, Bucuresti, RO) [1188]
- P3.31** Separation and concentration of Cr(VI) from ground waters by membrane solvent extraction. **B. Galán, *M. J. Calzada, *M. J. Rivero, I. Ortiz** (Univ. Cantabria, Santander, ES) [1372]
- P3.32** Solving problems in liquid extraction on the computer using Mathcad(R). ***E. N. Bart, J. Kisutcza** (NJIT, Newark NJ, US) [1412]
- P3.33** Preparation and characterisation of bioemulsifier from *Saccharomyces cerevisiae* and its application in food products. ***H. Torabizadeh, S. A. Shojaosadati, H. A. Tehrani** (IROST, Tehran, IR) [1444]
- P3.34** Design of reactive extraction and extractive reaction (RE) processes by shortcut methods. **A. M. Rivera, *C. A. Cardona** (Nat. Univ. Colombia Manizales, CO) [520]
- P3.35** Process of gallium recovery from Bayer process liquor (sodiumaluminate solution) - development and computer simulation. ***R. Stevanovic, A. Mitrovic¹, V. Cvetkovski²** (Vinca Inst. Nucl. Chem., Beograd, YU; ¹Inst. Mater. Testing, Beograd, YU; ²Copper Inst., Beograd, YU) [1467]
- P3.37** Extraction of tea treated by DIC process. **Z. Czyzak, H. Hoogland¹, K. Allaf, *V. Sobolik** (Univ. La Rochelle, FR; ¹Unilever Nederland, Rotterdam, NL) [1155]
- P3.38** Studies on the recovery and separation of Ir(IV) and Ru(III) from chloride solutions using Cyanex 923 as an extractant. **C. Kedari, T. Coll, *A. Fortuny, E. Goralska, A. M. Sastre** (Univ. Polit. Catalunya, Barcelona, ES) [1594]

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P3.43 Preparation of enzymatic membranes by immobilization with sol-gel method. **M. Rosso**, ***M. Habulin**¹, **M. Primožič**¹, **Z. Novak**¹, **D. Paolucci-Jeanjean**, **Z. Knez**¹, **G. Rios** (IEM UMR, Montpellier, FR; ¹Univ. Maribor, SI) [412]

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P3.45 Modification of hydrodynamic properties of poly(ethylene) terephthalate track membranes by plasma method. ***L. I. Kravets**, **S. N. Dmitriev**, **A. B. Gilman**¹, **A. I. Drachov**¹ (Joint Inst. Nucl. Res., Dubna, RU; ¹Inst. Synt. Polym. Mat., Moskva, RU) [1060]

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P3.48 Ion-exchange membranes based on sulfonated poly(1,4-phenylene sulfide). **J. Schauer** (Inst. Macromol. Chem., Praha, CZ) [1388]

P3.49 Pervaporation membranes based on fullerene - polyphenylene oxide compositions. **G. Polotskaya**, **A. Pen'kova**, ***A. M. Toikka**¹ (Inst. Macromol. Chem., St. Petersburg, RU; ¹St. Petersburg State Univ., RU) [1601]

P3.50 The influence of ionic strength on microfiltration of anatase dispersion. ***D. Šmídová**, **P. Mikulášek** (Univ. Pardubice, CZ) [184]

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P3.52 Mass transfer modelling in nanofiltration membrane: Comparison between two models. **F. Boucard**, **D. Ciceron**¹, **S. Alexandrova**¹, ***A. Saboni**² (IUT Cherbourg, Saint Lo, FR; ¹IUT Caen, FR; ²INSA Rouen, FR) [624]

P3.53 Nanofiltration: effect of the mineral salt concentration on the mass transfer. ***F. Garcia**, **C. Allegre**, **P. Moulin**, **F. Charbit** (UMR, Marseille, FR) [651]

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P3.57 Modeling of reverse osmosis transport for the case of solute-membrane affinity in multi-component aqueous systems. ***H. Mehdizadeh**, **K. Molaiee-Nejad**, **Y. C. Chong** (Univ. Qatar, Doha, QA) [1263]

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P3.59 Nitrate ions retention by nanofiltration: I. Experimental study and membrane comparison. **F. Garcia**, **D. Ciceron**, ***S. Alexandrova**¹, **A. Saboni**² (IUT, Caen, FR; ¹INSA, Mont-Saint-Aignan, FR) [1562]

P3.60 Nitrate ions retention by nanofiltration: II. Mass transfer modelling. **F. Garcia**, **D. Ciceron**, ***S. Alexandrova**¹, **A. Saboni**² (IUT, Caen, FR; ¹INSA, Mont-Saint-Aignan, FR) [1563]

P3.61 Transport of binary mixture of adsorbable gases in Vycor glass. ***J. Čermáková**, **J. Yang**¹, **P. Uchytíl**, **A. Seidel-Morgenstern**² (Inst. Chem. Proc. Fundam., Praha, CZ; ¹O. von Guericke Univ., Magdeburg, DE; ²Max-Planck Inst. Dyn. Compl. Tech. Syst., DE) [933]

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P3.64 Comparative study of commercially available polymeric membranes for the dehydration of acetic acid/water mixtures by pervaporation. ***D. E. Gorri**, **C. Casado**, **A. Urriaga**, **I. Ortiz** (Univ. Cantabria, Santander, ES) [491]

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P3.67 Atomistic modelling of inorganic permselective membranes for CO₂ recovery. ***D. A. Mooney**, **J. M. D. MacEroy**, **N. Kozachok**, **L. Cuffe**, **M. Tacke** (Univ. Coll., Dublin, IE) [1533]

P3.68 Carrier mediated transport of Ni(II) in three phases pertraction system. ***S. Alexandrova**, **V. Rollet**, **K. Dimitrov**, **A. Saboni**¹ (Univ. Caen, FR; ¹INSA Rouen, Mont-Saint-Aignan, FR) [484]

P3.69 Mass transfer characterization of Donnan dialysis: A case of a bi-ionic chloride-nitrate strip solution. ***D. Nwal Amang**, **S. Alexandrova**, **P. Schaezel** (Univ. Caen, Saint Lo, FR) [623]

P3.70 Hybrid adsorption and microfiltration process for removal of metals from aqueous solutions. **T. Bakalár**, ***S. Schlosser**¹, **M. Búgel** (Tech. Univ., Košice, SK; ¹Slovak Univ. Technol., Bratislava, SK) [968]

P3.71 Fractionation of carboxylic acids mixtures obtained by citric fermentation using facilitated pertraction. ***D. Cascaval**, **A.-I. Galaction**¹, **C. Oniscu** (Tech. Univ. Iasi, RO; ¹Univ. Med. Pharm., Iasi, RO) [1457]

P3.72 Water treatment of rejections of textile industry and oil refinery by ultrafiltration and nanofiltration. ***A. Chahboub**, **A. Madani**¹, **A. Selatnia**¹ (Univ. Laghouat, Ghardaia, DZ; ¹Ec. Nat. Polytech., Algiers, DZ) [1006]

P3.73 Removal of pollutants from indoor air using zeolite membranes. **S. Aguado**, **A. C. Polo**, **M. P. Bernal**, ***M. Menendez**, **J. Coronas**, **J. Santamaria** (Univ. Zaragoza, ES) [1098]

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P3.78 Purification of raw glycerol water by electromembrane processes. ***V. Fára, A. Cernín, V. Mejta, I. Jandová¹, D. Tvrzník¹** (MEGA a. s., Stráž pod Ralskem, CZ; ¹Inst. Chem. Technol., Praha, CZ) [1595]

P3.79 Studies on transport mechanism of chromium (III) extraction from sulfuric acid by di(2,4,4-trimethylpentyl) phosphonic acid (CYANEX). **L. Sadoun, F. Hassaine-Sadi** (USTHB, Bab-Ezzour, DZ) [1542]

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P3.198 Study of the adsorption of BSA on macroreticular poly(styrene-co-divinylbenzene) microparticles with different structural characteristics. **C. Garcia, *J. Cuellar** (Univ. Salamanca, ES) [1640]

P3.199 Performance of benchmark plant of lithium recovery from seawater using a novel lambda-MnO2 adsorbent. ***M. Holba, A. Kitajou¹, T. Suzuki¹, S. Nishihama¹, K. Yoshizuka, Y. Ikegami, M. Monde** (Saga Univ., Imari, JP; ¹Univ. Kitakyushu, JP) [1637]

P3.200 The application of column flotation technology in the beneficiation of Saudi phosphate ores. **T. F. Al-Fariss** (King Saud Univ., Riyadh, SA) [1529]

P3.201 Solution of transport equations by random walk model. **M. Lubert, *M. Lang-Lazi, L. Barna¹, P. Moszkowicz¹, K. Kollar-Hunek** (Budapest Univ. Technol. Econ., HU; ¹INSA Lyon, Villeurbanne, FR) [1626]

P3.202 Development study of the porous texture of activated carbons from enthalpies of immersion in benzene. ***A. Addoun, M. Bouaouina** (USTHB, Bab-Ezzouar, DZ) [1744]

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P3.205 Hydrodynamics of heterogeneous mediums in tubes and channels with permeable walls. **F. G. Akhmediev, R. I. Ibjatov, L. P. Kholpanov¹, *I. G. Bekbulatov** (Kazan State Acad. Arch. Build., RU; ¹Inst. Chem. Phys. Probl., Chernogolovka, RU) [264]

P3.206 Performance evaluation of a plate-wire electrostatic precipitator operating on fine particle removal. ***M. C. R. Falaguasta, J. Steffens, J. R. Coury, J. A. S. Gonçalves** (UFSC, Sao Carlos, BR) [673]

P3.207 Efficiency of centrifugal separation in the treatment of waste emulsified oils. ***A. Cambiella, J. M. Benito, C. Pazos, J. Coca Prados** (Univ. Oviedo, ES) [222]

P3.208 Modelling of oilseed expression: from hydraulic press to screw press. ***P. Willems, N. Schouten, N. J. M. Kuipers, A. B. de Haan** (Univ. Twente, Enschede, NL) [643]

P3.209 Experimental photocatalytic flow reactor. ***J. Pridal, J. Pridal, A. Urban** (Mikropur, Hradec Kralove, CZ) [944]

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P3.210 Preparation of KCl from carnallite with purity of higher than 99% at laboratory scale. **F. Torabi Esfahani, *S. Nouri Khorasani, M. Amin, M. Tabrizchi** (Isfahan Univ. Technol., IR) [686]

P3.211 Investigation and simulation of the secondary nucleation's mechanism in a FC-Crystallizer. ***M. Karpunina, M. V. Silos, A. Lieb¹, E. M. Koltsova, M. Kind¹** (Mendeleev Univ. Chem. Technol., Moskva, RU; ¹Univ. Karlsruhe, DE) [208]

P3.212 Precipitation of gypsum from waste sulfuric acid and lime. **T. Gomiňsek, *A. Lubej, C. Pohar** (Cinkarna, Celje, SI) [1483]

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- P5.3** Discrete time delayed system stability theory in the sense of Lyapunov: an application to chemical engineering and process technology. **D. L. Debeljkovic, *M. P. Lazarevic, S. B. Stojanovic¹, M. B. Jovanovic², S. A. Milinkovic²** (Fac. Mech. Eng., Beograd, YU; ¹Univ. Nis, YU; ²Fac. Metall. Technol., Beograd, YU) [1083]
- P5.4** Modeling and analysis of membrane bioreactor stability. **N. V. Menshutina, *S. V. Sokolov, N. V. Tarutina, A. E. Sofiev¹** (Mendelev Univ. Chem. Technol., Moskva, RU; ¹Cent. Res. Inst. Compl. Aut., RU) [637]
- P5.5** Complex dynamics of CO oxidation in catalytic converter. ***M. Zahrusky, V. Nevoiral, P. Kočí, M. Kubíček, M. Marek** (Inst. Chem. Technol., Praha, CZ) [1181]
- P5.6** Alternative procedure for two-layer optimization and control strategies for real time integration of a three-phase catalytic reactor for the production of cyclohexanol. **D. N. C. Melo, E. C. Vasco de Toledo, S. D. M. Hasan¹, *R. Maciel Filho** (UNICAMP, Campinas, BR; ¹UNIOESTE, Toledo, BR) [386]
- P5.7** Automated control system of nickel hydroxide precipitation. **A. V. Lopashov, *V. V. Volynsky, I. V. Kolesnikov, E. V. Tsybalenko** (Power Sources Plant, Saratov, RU) [63]
- P5.8** Batch reactor optimal control using genetic algorithm. ***V. Lavric, O. Raducan, A. Woinaroschy** (Univ. Politehnica, Bucuresti, RO) [250]
- P5.9** Stability of time delay technological systems with nonlinear perturbations. ***S. B. Stojanovic, D. L. Debeljkovic¹, M. L. Lazic, V. B. Veljkovic** (Fac. Technol., Leskovac, YU; ²Fac. Mech. Eng., Beograd, YU) [1112]
- P5.10** Dstability analysis of time delay technological systems with multiple time delays. ***S. B. Stojanovic, D. L. Debeljkovic¹, M. L. Lazic, V. B. Veljkovic** (Fac. Technol., Leskovac, YU; ²Fac. Mech. Eng., Beograd, YU) [1111]
- P5.11** Analysis of linear autonomous time delay fractional order systems: finite time stability. **M. P. Lazarevic** (Fac. Mech. Eng., Beograd, YU) [334]
- P5.12** Influence of chosen working parameters of the tubular chemical reactor with mass recirculation on fractal dimension of dynamical solutions of system. ***M. Berezowski, J. Smula¹, M. Kurpas** (Silesian Univ. Technol., Gliwice, PL; ¹Univ. Studi Sannio, Benvenuto, IT) [150]
- P5.13** Fuzzy controller design for distillation column. ***A. Vasičkaninová, M. Bakošová** (Slovak Univ. Technol., Bratislava, SK) [1247]
- P5.14** Control system based on simplified mathematical model. ***M. Karšaiová, M. Bakošová, M. Ondrovičová** (Slovak Univ. Technol., Bratislava, SK) [1211]
- P5.15** Parameter adjustment using Kalman filter of advanced control strategy applied to fermentation process. **E. R. Duarte, L. Ender¹, *R. Maciel Filho** (UNICAMP, Campinas, BR; ¹Reg. Univ. Blumenau, BR) [438]
- P5.16** A methodology for on-line learning of neural networks in control strategy development. **E. R. Duarte, L. Ender, *R. Maciel Filho** (UNICAMP, Campinas, BR) [446]
- P5.17** Efficient production scheduling of a large-scale industrial facility. **P. Tsialis, C. C. Pantelides, A. A. Levis¹, L. G. Papageorgiou¹, *M. Georgiadis², I. Sanidiotis³** (Process Systems Enterprise, London, UK; ¹Univ. Coll. London, UK; ²Imperial Coll. London, UK; ³Morris S. A., Nea-Santa, GR) [548]
- P5.18** Measurement of expenditure and moisture content of oil on long distance pipe lines with application of the personal computer. **S. G. Gasanov, *V. V. Bogatov, R. M. Kasimov, E. M. Mamedov** (Inst. Chem. Probl., Baku, AZ) [66]
- P5.19** Neural network based approach for modeling and optimization applied to an industrial isoprene unit production. ***R. M. B. Alves, C. A. O. Nascimento** (Univ. Sao Paulo, BR) [1410]
- P5.20** Decreasing the flow rate of CO₂ in methanol process using NLP model. ***A. Kovač Kralj, P. Glavič** (Univ. Maribor, SI) [1464]
- P5.21** Multi-objective optimization of industrial nylon-6.6 polymerization process in a twin-screw extruder reactor using genetic algorithm approach. ***R. M. B. Alves, C. A. O. Nascimento, L. V. Loureiro, P. Floquet¹, X. Julia¹** (Univ. Sao Paulo, BR; ¹LGC CNRS, Toulouse, FR) [1409]
- P5.22** Mathematical modelling and simulation of a pilot plant of solid waste pyrolysis. ***V. R. Wiggers, H. F. Meier, A. A. C. Barros, M. R. Wolf-Maciel¹** (FURB, Blumenau, BR; ¹UNICAMP, Campinas, BR) [625]
- P5.23** A neural network was used in the optimization of the solid state fermentation process, for fumaric acid production. **C. Y. Yamamoto, *R. A. Strapsson, A. L. Woicichowski, C. R. Soccol, J. Paca¹** (Fed. Univ. Parana, BR; ¹Inst. Chem. Technol., Praha, CZ) [448]
- P5.24** Mathematical modelling for acetic anhydride diffusion in solid wood. ***A. Aboltins, A. Morozovs, T. Zukova** (Latvia Univ. Agric., Jelgava, LV) [255]
- P5.25** Modelling of an activated sludge plant using Simulink. **H. López, *E. Marañón¹, S. Roces, I. Machón, J. Rodríguez¹, I. Vázquez¹** (Univ. Oviedo, ES; ¹Higher Sch. Ind. Eng., Gijón, ES) [1390]
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- P5.27** Modelisation of deinking operation. ***J. Labidi, X. Zafra, M. A. Pelach, P. Mutje** (Univ. Girona, ES) [810]
- P5.28** Optimization of a three phase hydrogenation reactor: an approach for large scale system. **M. C. A. Ferreira Rezendé, *R. Maciel Filho, A. C. Costa** (UNICAMP, Campinas, BR) [664]
- P5.29** Mathematical simulation of kinetics of the carbon nanotubes formation during the catalytic pyrolysis of methane. **I. S. Nenaglyadkin, *E. M. Koltsova, E. G. Rakov** (Mendelev Univ. Chem. Technol., Moskva, RU) [627]
- P5.30** Dynamic modelling of polyethylene chlorination for process development and control. ***G. Kun, F. Szeifert, T. Chovan, L. Nagy, A. Tóth¹, A. Czeller¹** (Univ. Veszpremi, HU; ¹BorsodChem Ltd., Kazincbarcika, HU) [538]
- P5.31** Development of a user-friendly software for batch cooling crystallization process simulation and optimization: an open CAD approach. **C. B. B. Costa, *R. Maciel Filho** (UNICAMP, Campinas, BR) [530]
- P5.32** Detailed modelling of a batch cooling crystallization process for real time process integration. **C. B. B. Costa, *R. Maciel Filho** (UNICAMP, Campinas, BR) [521]
- P5.33** Simulation and analysis of biomass oscillations in a chemostate cultures. ***A. S. Skitchko, N. S. Panikov¹, E. M. Koltsova** (Mendelev Univ. Chem. Technol., Moskva, RU; ¹Inst. Microbiol., Moskva, RU) [414]
- P5.34** Modeling and simulation of pantolactone extraction process. ***C. Cormos, S. Agachi¹** (Terapia, Cluj-Napoca, RO; ¹Babes-Bolyai Univ., Cluj-Napoca, RO) [118]
- P5.35** Modeling and simulation of sodium beta-alaninate synthesis: comparison between commercial softwares. ***C. Cormos, S. Agachi¹** (Terapia, Cluj-Napoca, RO; ¹Babes-Bolyai Univ., Cluj-Napoca, RO) [111]
- P5.36** Simulation of a laminar flow reactor for catalytic conversion of starch. **A. Iran-shahi, H. R. Hakimelahi, *R. Sotudeh-Gharebagh, N. Mostoufi** (Univ. Tehran, IR) [204]
- P5.37** Implementation of a real thermodynamic property model in IPSEpro. ***X. Ji, M. Jonsson, J. Yan** (Royal Inst. Technol., Stockholm; Lulea Univ. Technol., SE) [1276]

- P5.38** The creating of the software for the process of synthesis of liposomes. ***A. Zabolotsky, N. Michailova¹, E. M. Koltsova** (Mendeleev Univ. Chem. Technol., Moskva, RU; ¹Lomonosov State Acad. Fine Chem. Technol., Moskva, RU) [371]
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- P5.41** Computer-aided performance analyses of batch multi-product plants. **I. von Poser, *G. Gruhn** (Tech. Univ. Hamburg-Harburg, DE) [1066]
- P5.42** The system of synthesis of scheme multicomponent distillation. **L. S. Gordeev, *A. V. Koznov, O. A. Korzhova, L. A. Zhurilova** (Mendeleev Univ. Chem. Technol., Moskva, RU) [861]
- P5.43** IS "Crystalogue" for equipment design and for optimization of mass crystallization processes. **V. A. Vasilenko, E. Y. Kortchagin, E. M. Koltsova, S. S. Kulkov, *R. A. Suleymanov** (Mendeleev Univ. Chem. Technol., Moskva, RU) [860]
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- P5.47** Information system for extrusion forming process of catalyst pastes. ***A. V. Jensa, A. A. Polunin, V. V. Kostutchenko, I. A. Petropavlovskiy, E. M. Koltsova** (Mendeleev Univ. Chem. Technol., Moskva, RU) [205]
- P5.48** Cellular automata for simulation of nanostructured glasses. ***E. R. Abasheva, V. N. Sigae, E. M. Koltsova** (Mendeleev Univ. Chem. Technol., Moskva, RU) [207]
- P5.49** A software to dynamic predictions of oil extraction evaporation plants. **A. F. Custódio, D. D. F. Rezende, *R. Maciel Filho** (UNICAMP, Campinas, BR) [280]
- P5.50** Computer aided fault diagnosis and corrective action when using a biosensor under extreme conditions. ***F. A. Batzias, C. G. Siontorou** (Univ. Piraeus, GR) [1209]
- P5.51** Prediction of properties of oils and oil fractions by means of neural networks. **L. S. Gordeev, M. B. Glebov, *P. N. Telyatnikov** (Mendeleev Univ. Chem. Technol., Moskva, RU) [397]
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- P5.54** Application of information and expert systems in the field of nanoglandular substance form. ***A. Petraev, P. Reznichenko, E. G. Rakov, I. Soboleva, E. M. Koltsova** (Mendeleev Univ. Chem. Technol., Moskva, RU) [850]
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- P5.56** Mathematical modeling of H₂S and CO₂ absorption column using alkanolamine solutions. **N. Kasiri, *M. A. Ghayem** (Iran Univ. Sci. Tech., Tehran, IR) [1732]
- P5.57** Image analysis of heterogeneous mixtures by virtual instruments. **E. Jirák, *A. Husáková** (Inst. Chem. Technol., Praha, CZ) [1699]
- P5.58** Recycling technologies control. ***V. Vašek, K. Kolomazník, D. Janáčová** (T. Bata Univ., Zlín, CZ) [1680]
- P5.59** Optimization of liquids consumption at washing processes realized in tanning drum. ***D. Janáčová, K. Kolomazník, V. Vašek** (T. Bata Univ., Zlín, CZ) [1679]
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- P5.61** Software packages for simulation and optimization chemical-technological processes. **R. M. Kasimov, E. M. Mamedov, *V. V. Bogatov, K. A. Guseynov** (Inst. Chem. Probl., Baku, AZ) [67]

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- P5.66** Financial investigation of solar plants at low temperature. ***B. Khiari, S. Ben Mabrouk** (INRST, Hammam-Lif, TN) [129]
- P5.67** Peat-mineral compositions as a novel product based upon biofuel. **V. V. Alferov, A. E. Usanov, O. S. Misnikov, *E. M. Sulman** (Iver Tech. Univ., RU) [135]
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- P5.69** Modeling SCWO with Aspen. ***E. D. Lavric, H. Weyten¹, J. De Ruyck, V. Plesu², V. Lavric²** (Vrije Univ., Bruxelles, BE; ¹Vlaamse Inst. Technol., Mol, BE; ²Univ. Politehnica, Bucuresti, RO) [243]
- P5.70** Assessment explosion-proof and fire risk industrial targets in a context of strategy of sustainable development. ***G. Statjukha, M. Pidmohilny¹, T. Bojko, V. Bendyug** (Nat. Tech. Univ., Kyiv, UA; ¹NDI, Kyiv, UA) [475]
- P5.71** Comprehensive investigation about energy-loss amount in ammonia plant (KHPC; Khorassan Petrochemical Complex) and presentation some applicable recommendations to reduce it. ***K. R. Satvati, R. Z. Zarifana** (Khorassan Petrochem. Compl., Bojnord, IR) [497]
- P5.72** Energy saving and emission reduction at the sugar-plant with take into account of condensate heat of return steam in process integration. **L. L. Tovashnyansky, P. O. Kapustenko, *L. M. Ulyev, A. Y. Perevertlyenko¹, S. A. Boldyryev², A. S. Demirskiy¹** (Nat. Tech. Univ., Kharkiv, UA; ¹AO Sodruzhestvo, Kharkiv, UA) [552]
- P5.73** Kinetics investigation and design of nitrogen oxides absorption by tributylphosphate. **Y. Beznosyuk, L. Bugaeva, J. Jezowski¹, *G. Statjukha** (Nat. Tech. Univ., Kyiv, UA; ¹Tech. Univ. Rzeszow, PL) [614]
- P5.74** Principles of expert system development for decision making in gas emissions reduction. ***V. Meshalkin, L. Klimenkova, I. Soboleva** (Mendeleev Univ. Chem. Technol., Moskva, RU) [688]

- P5.75** Setting national priorities for energy standards in Iran. ***S. Rowshan zamir, S. J. J. Adid, M. H. Eikani**¹ (Iran Univ. Sci. Technol., Tehran, IR; ¹IROST, Tehran, IR) [712]
- P5.76** The application of conceptual design procedures to the retrofit of existing wastewater treatment systems. ***G. Statujka, O. O. Kvitka, J. Jeżowski¹, I. M. Dzhygryev** (Nat. Tech. Univ., Kyiv, UA; ¹Tech. Univ. Rzeszow, PL) [748]
- P5.77** Upgrading water piping systems of industrial complex. ***V. Iacob, D. Crisbananu, D. C. Popescu, I. Ivanescu¹, P. Iancu²** (SNP Petrom, Ploiesti, RO; ¹SNP Petrom, Bucuresti, RO; ²Univ. Politehnica, Bucuresti, RO) [771]
- P5.78** Energy saving retrofit of refrigerating section of dairy factory with using of modern methods of process integration and high effective heat exchangers. **L. L. Tovazhnyansky, P. O. Kapustenko¹, O. Perevertaylenko¹, *S. O. Boldyryev¹, A. O. Garev¹** (Nat. Tech. Univ., Kharkiv, UA; ¹SODRUGESTVO, Kharkiv, UA) [794]
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- P5.84** Users friendly computational support in heat exchangers design. ***K. Bonischova, E. Hribkova, J. Kohoutek, P. Stehlik, Z. Jegla** (Brno Univ. Technol., CZ) [1012]
- P5.85** Heavy metals as pollutants in incinerators - "downwards analysis". ***J. Buchta, M. Filip, L. Bébar, P. Stehlik** (Brno Univ. Technol., CZ) [1027]
- P5.86** Improvements of wet scrubbing process in units for thermal processing of wastes. ***M. Filip, J. Buchta, L. Bébar, P. Stehlik** (Brno Univ. Technol., CZ) [1028]
- P5.87** Evaluation of different approaches for prediction of NOx emissions concentration from gas flames. ***V. Kermes, J. Hajek, R. Nekvasil, P. Stehlik, L. Bébar, J. Oral¹** (Tech. Univ. Brno, CZ; ¹Eveco Ltd., Brno, CZ) [1036]
- P5.88** Simple computational tool for calculation of units for thermal processing of wastes. ***M. Sponar, L. Bébar, R. Puchyr¹, P. Stehlik** (Brno Univ. Technol., CZ; ¹Eveco Ltd., Brno, CZ) [1039]
- P5.89** Simple mathematical model of heat recovery steam generator. ***M. Sponar, P. Stehlik, L. Bébar** (Tech. Univ. Brno, CZ) [1040]
- P5.90** Compact equipment for catalytic destruction of pollutants in waste gases. ***R. Dvorak, L. Bébar, R. Stulir¹, P. Stehlik, J. Oral¹** (Brno Univ. Technol., CZ; ¹EVECO, Brno, CZ) [1057]
- P5.91** Pollution reduction by the use of a hybrid system for greenhouse conditioning. ***M. Lazaar, S. Kooli, M. Hazami, A. Farhat, A. Belghith¹** (INRST, Hammam Lif, TN; ¹FST, Tunis, TN) [1065]
- P5.92** Life Cycle Assessment of beef production in Galicia (Spain). **A. Hospido, *M. T. Moreira, G. Feijoo** (Univ. Santiago de Compostela, ES) [1159]
- P5.93** Life cycle assessment of medium density fibreboard (MDF) manufacture. **R. Rivela, A. Hospido, M. T. Moreira, *G. Feijoo** (Univ. Santiago de Compostela, ES) [1175]
- P5.94** Practical, environmental and economic evaluation of different options for horse manure management. ***J. Lundgren, E. Pettersson¹** (Lulea Univ. Technol., SE; ¹Energetikniskt Cent. ETC, Pitea, SE) [1185]
- P5.95** Computer aided optimal determination of biosensors replacement program for keeping a cleaner environment in underground mine operations. ***F. A. Batziás, C. G. Siontorou** (Univ. Piraeus, GR) [1210]
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- P5.236** Effect of external excitations on the axisymmetrical air jet flow structures - investigations of the jet impinging on a flat surface. **D. Cvetinovic, J. Tihon¹, J. Vejražka¹, J. Drahoš¹** (Inst. Nucl. Sci. Vinca, Beograd, YU; ¹Inst. Chem. Proc. Fundam., Praha, CZ) [1644]
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- P5.246** Rheological behaviour of model viscoelastic solutions of polymers. **H. Bendová, P. Štem¹, B. Šiška, I. Machač** (Univ. Pardubice, CZ; ¹Inst. Hydrodyn., Praha, DK) [363]
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- P5.261** An experimental and modelling study of internally circulating fluidised bed incinerator. ***S. A. Roh, D. S. Jung, S. D. Kim** (Korea Adv. Inst. Sci. Technol., Daejeon, KR) [460]
- P5.262** Factorial planning for the identification of flow regimes of heterogeneous particles in a fluidized bed. ***K. Tannous, R. L. Ramos** (UNICAMP, Campinas, BR) [568]
- P5.263** Circulating fluidized bed with swirl flow riser and its application to photo-catalytic NO_x treatment. ***S. Matsuda, H. Hatano** (Nat. Inst. Adv. Ind. Sci. Technol., Tsukuba, JP) [851]
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- P5.265** Stability of sawdust beds in drying in conical spouted beds. ***M. J. San José, S. Alvarez, A. Ortiz de Salazar, M. Olazar, J. Bilbao** (Univ. Pais Vasco, Bilbao, ES) [1541]

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- P5.275** Possibilities for flying ash application in cement industry. ***G. Stefanovic, L. Cobjasic, L. Andric¹** (Univ. Nis, YU; ¹Inst. Technol. Nucl. Other Min. Raw Mat., Beograd, YU) [680]
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- P5.289** Use of lignosulphonates as modifiers of CaCO₃ specific surface area for desulfurization. ***M. J. Renedo, J. Fernández** (Univ. Cantabria, Santander, ES) [1588]
- P5.290** Angle of internal friction - mechanisms of particle movement. **J. Zegzulka** (Tech. Univ., Ostrava, CZ) [1603]
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- P7.3** Properties and combustion activity of hydrotalcite-like compounds calcined at various temperatures. ***P. Čuba, F. Kovanda¹, L. Hilaire², K. Jirátovej¹** (Inst. Chem. Proc. Fundam., Praha, CZ; ¹Inst. Chem. Technol., Praha, CZ; ²CNRS-ECPM, Strasbourg, FR) [904]
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- P7.6** Hot gas cleaning application for biomass gasification. ***S. Skoblja, B. Koutský, J. Malecha** (Inst. Chem. Technol., Praha, CZ) [1089]
- P7.7** Kinetic study of co-firing of wood granules with propane/air supply. ***A. Mejjere, M. Gedrovics¹, M. Zake², I. Barmina²** (Riga Tech. Univ., LV; ¹JSC Latvias Gaze, Riga, LV; ²Univ. Latvia, Salaspils, LV) [1108]
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- P7.33** Preparation of spherical porous crosslinked cyclodextrin polymers and their application as a sorbent for phenols removal of wastewater. **H. Yamasaki, Y. Makihata, K. Fukunaga¹** (Ube Nat. Coll. Technol., JP; Yamaguchi Univ., Ube, JP) [687]
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- P7.39** Organic synthetic dyes; persistent water pollutants. **A. Loncaric Bozic, N. Koprivanac, S. Papic, D. Vujec** (Univ. Zagreb, HR) [1354]
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- P7.43** Degradation of distiller's slops by thermophilic bacteria. **S. Ferzik, T. Klišová, K. Lapišová, K. Petříková, M. Rychtera, K. Melzoch** (Inst. Chem. Technol., Praha, CZ) [1154]
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