XXI International conference on Chemical Reactors
CHEMREACTOR-21

Delft, the Netherlands
September 22-25, 2014

# Scientific Program


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## XXI International conference on Chemical Reactors CHEMREACTOR-21

**Delft, the Netherlands, September 22-25, 2014**

**EFCE Event 726**

**Boreskov Institute of Catalysis of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia**

**TU Delft Process Technology Institute, Delft, the Netherlands**

**European Federation on Chemical Engineering**

**Scientific Council on Theoretical Fundamentals of Chemical Technology RAS Scientific Council on Catalysis RAS**

**Scientific Council on Catalysis RAS**

**http://conf.nsc.ru/CR-21-2014**

**Conference Proceedings:**

**CHEMICAL ENGINEERING JOURNAL, ELSEVIER**

# SCIENTIFIC PROGRAM

**September 22, Monday, 13.20**

**Conference opening**

**Opening Address: Professor Andrzej Stankiewicz, The Netherlands**

**SENAATSZAAL Hall**

***On the centenary of the Professor Mikhail Slin'ko birth***

***Chairpersons: Professor Andrzej Stankiewicz, The Netherlands, Professor Alexandr Noskov, Russia***

**September 22, Monday, 13.30**

**Valentin Parmon**

**PROFESSOR MIKHAIL SLIN'KO – INSTITUTE OF CATALYSIS IN NOVOSIBIRSK AND MATHEMATICAL MODELING OF CHEMICAL PROCESSES AND REACTORS IN RUSSIA**

*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**September 22, Monday, 14.00**

**Marina M. Slin'ko**

**Memories about father**

**M.G. SLIN'KO – AS A PERSON, SOLDIER AND SCIENTIST**

*Institute of Chemical Physics RAS, Moscow, Russia*

**September 22, Monday, 14.30**

**Jacob A. Moulijn[1], Freek Kapteijn[1], Javier Pérez-Ramírez[2]**

**A Professor Mikhail Slin'ko Honorary Lecture:**

**MULTI-LEVEL ENGINEERING OF CATALYTIC REACTIONS**

*[1]Delft University of Technology, The Netherlands*

*[2]Catalysis Engineering, ETH Zurich, Zurich, Switzerland*

***15.30 Coffee-break***

**September 22, Monday, 16.00**

**Dan Luss**

**A Professor Mikhail Slin'ko Honorary Lecture:**

**CATALYTIC REACTION ENGINEERING OF THE REDUCTION OF DIESEL AUTOMOBILE EMISSIONS**

*University of Houston, USA*

## KEYNOTE LECTURES

***Chairperson: Professor Dmitry Murzin, Finland***

**17.00**

**KL-1** **Zinfer R. Ismagilov[1,2]**, Kerzhentsev M.A.[1], Yashnik S.A.[1], Khairulin S.R.[1], Kuznetsov V.V.[1], Parmon V.N.[1], Bourane Abdennour[3], Koseoglu Omer.R.[3]

**NEW CATALYSTS AND CATALYTIC PROCESSES FOR OXIDATIVE DESULFURIZATION OF DIESEL FUEL**

*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

*[2]Institute of Coal Chemistry and Material Sciences SB RAS, Kemerovo, Russia*

*[3]Saudi Aramco, Research and Development Center, Dhahran, Kingdom of Saudi Arabia*

**17.30**

**KL-2** **Evgeny V. Rebrov**

**REACTION INTENSIFICATION BY INDUCTION HEATING AND ULTRASONIC CAVITATION**

*School of Engineering, University of Warwick, Coventry, CV4 7AL, UK*

***19.00 Welcome Reception***

## September 23, Tuesday

## Morning Session
## SENAATSZAAL Hall

## PLENARY LECTURES

***Chairperson: Dr. Andrey Zagoruiko, Russia***

**9.00**

**PL-1** **Guy Marin[1],** Grigory Yablonsky[2]
**KINETICS OF CHEMICAL REACTIONS: DECODING COMPLEXITY**
*[1]Ghent University, Belgium*
*[2] St Louis University, USA*

**10.00**

**PL-2** **Marc-Olivier Coppens**
**NATURE-INSPIRED ENGINEERING OF CATALYTIC PROCESSES — AVENUES TO SCALABILITY, EFFICIENCY AND ROBUSTNESS**
*University College London, Department of Chemical Engineering, and EPSRC "Frontier Engineering" Centre for Nature Inspired Engineering, Great Britain*

***11.00 Coffee-break***

## KEYNOTE LECTURES

***Chairperson: Professor Andrzej Kolodziej, Poland***

**11.30**

**KL-3** **Andrey Kuzmin**
**CONFINED SWIRLED FLOWS FOR PROCESS INTENSIFICATION**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**12.00**

**KL-4** **Anne Galarneau**
**FLOW-THROUGH CATALYSIS FOR INTENSIFIED PRODUCTION**
*University of Montpellier, France*

***12.30 Lunch***

## Afternoon Session
## SENAATSZAAL Hall

### ORAL PRESENTATIONS

### Section I.
**Advances in Chemical Reactors Fundamentals**

Chemical Reactions Kinetics
Energy & Mass Transfer in Chemical Reactors
Fundamentals of Hydrodynamics and Fluid Flow in Chemical Reactors
Specialized Software for Development of Chemical Reactors and Flow-Sheeting of Reactive Processes

***Chairperson: Professor Eugeniusz Molga, Poland***

**14.00**
**OP-I-1**
Arve K., Sifontes V., **Murzin D.,** Salmi T.
**KINETIC MODELING OF GALACTOSE HYDROGENATION OVER RUTHENIUM ON ALUMINA CATALYST**
*Åbo Akademi University, Turku/Abo, Finland*

**14.20**
**OP-I-2**
**Sulman E.[1],** Doluda V.[1], Matveeva V.[1], Bykov A.[1], Sidorov A.[1], Lebedeva M.[1], Bronstein L.[2], Salmi T.[3], Murzin D.[3]
**DISACCHARIDES HYDROGENATION KINETICS OVER Ru BASED NANOSTRUCTURED CATALYSTS**
*[1]Tver Technical University, Tver, Russia*
*[2]Indiana University, Bloomington, USA*
*[3]Åbo Akademi University, Turku, Finland*

**14.40**
**OP-I-3**
**Sinev M.Y.,** Shapovalova O.V., Arutyunov V.S.
**SELECTIVITY OF SYNGAS FORMATION IN VOLUMETRIC MATRIX REFORMERS (RADIANT BURNERS): THERMODYNAMIC, KINETIC AND MACROKINETIC ASPECTS**
*Semenov Institute of Chemical Physics RAS, Moscow, Russia*

**15.00**
**OP-I-4**
**Pawlaczyk A.,** Gosiewski K.
**COMBUSTION OF LEAN METHANE-AIR MIXTURES IN MONOLITH BED: KINETIC STUDIES IN A LOW AND HIGH TEMPERATURE**
*Institute of Chemical Engineering PAS, Gliwice, Poland*

**15.20**
**OP-I-5**
**Ovchinnikova E.V.,** Urzhuntsev G., Chumachenko V.A., Echevsky G.V.
**KINETIC STUDY OF N-BUTANE ISOMERIZATION ON Pd-SZ CATALYST**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**15.40**
**OP-I-6**
Xue G.[1,2], **Thybaut J.W.[2],** Weng H.[1], Marin G.B.[2]
**SINGLE-EVENT MICROKINETIC (SEMK) ASSESSMENT OF THE CATALYTIC CRACKING OF CYCLOPARAFFINS ADMIXED WITH OLEFINS**
*[1]Research Institute of Petroleum Processing, East China University of Science and Technology, Shanghai, China*
*[2]Ghent University, Ghent, Belgium*

***16.00 Coffee break***

## Afternoon Session
## SENAATSZAAL Hall

### ORAL PRESENTATIONS

**Section I.**
**Advances in Chemical Reactors Fundamentals**

Chemical Reactions Kinetics
Energy & Mass Transfer in Chemical Reactors
Fundamentals of Hydrodynamics and Fluid Flow in Chemical Reactors
Specialized Software for Development of Chemical Reactors and Flow-Sheeting of Reactive Processes

***Chairperson: Professor Gunther Kolb, Germany***

**16.20**
**OP-I-7**
**Zagoruiko A.[1,2],** Noskov A.[1], Belyi A.[3], Smolikov M.[3]
**KINETIC MODEL OF NAPHTHA REFORMING PROCESS BASED ON THE USE OF THERMODYNAMIC POTENTIALS**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Tomsk Polytechnical University, Tomsk, Russia*
*[3]Institute for Hydrocarbon Processing SB RAS, Omsk, Russia*

**16.40**
**OP-I-8**
**Templis C.,** Papayannakos N.
**LIQUID TO PARTICLE MASS TRANSFER IN A STRUCTURED BED THREE PHASE MINI REACTOR**
*National Technical University of Athens, Zografos – Athens, Greece*

**17.00**

**OP-I-9**

**Haase S.,** Bauer T., Lange R.

**GAS-LIQUID TWO-PHASE FLOWS IN SQUARE MINICHANNELS: DIMENSIONLESS ANALYSIS OF FLOW REGIMES AND TAYLOR FLOW PARAMETERS**

*TU Dresden, Dresden, Germany*

**17.20**

**OP-I-10**

**Kolodziej A.[1,2],** Burghardt A.[1], Iwaniszyn M.[1], Kryca J.[1], Jodlowski P.[3], Lojewska J.[3]

**STRUCTURED REACTORS OPTIMISATION: ENTROPIC APPROACH**

[1]*Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland*

[2]*Opole University of Technology, Opole, Poland*

[3]*Jagiellonian University, Kraków, Poland*

**17.40**

**OP-I-11**

**Iwaniszyn M.[1],** Lojewska J.[2], Kolodziej A.[1,3]

**FLOW RESISTANCE AND HEAT TRANSFER IN SHORT CHANNELS OF METALLIC MONOLITHS: EXPERIMENTS VERSUS CFD**

[1]*Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland*

[2]*Jagiellonian University, Faculty of Chemistry, Kraków, Poland*

[3]*Opole University of Technology, Faculty of Civil Engineering, Opole, Poland*

**18.00**

**OP-I-12**

**Zarekar S.[1],** Heidig T.[2], Freund H.[2]

**3D SIMULATION OF LAMINAR FLUID FLOW IN OPEN CELLULAR MONOLITHS FOR STRUCTURED CATALYTIC REACTORS**

[1]*Otto-von-Guericke University Magdeburg, Magdeburg,* Germany

[2]*Friedrich-Alexander-University Erlangen-Nürnberg, Erlangen, Germany*

***18.30 Guide Excursion around Delft***

## Afternoon Session
## COMMISSIEKAMER Hall

### ORAL PRESENTATIONS

### Section II.
### Chemical Reaction Engineering and Reactors Design – Novel Approaches, Modeling, Scale-Up, Optimization

Mathematical Simulation and CFD Studies of Chemical Reactors
New Designs of Chemical Reactors (e.g. Structured Reactors, Membrane Reactors, Microreactors)
Novel Approaches in Chemical Reaction Processes Engineering (e.g. Microwave/Induction Heated Reactors, Ultrasonic Reactors, Unsteady-State Forcing and Sorption Enhancement in Chemical Reactors, Multifunctional Reactors)

***Chairperson: Professor Klaus Möller, South Africa***

**14.00**
**OP-II-1**
**Kapteijn F.,** Kaskes B., Vervloet D., van Ommen J.R.
**BOOSTING THE FISCHER-TROPSCH REACTOR OPERATION BY STRUCTURING.**
*Delft University of Technology, Delft, The Netherlands*

**14.20**
**OP-II-2**
Montebelli A.[1], Visconti C.[1], Groppi G.[1], **Tronconi E.[1],** Kohler S.[2], Venvik H.[3], Myrstad R.[4]
**HIGHLY CONDUCTIVE STRUCTURED CATALYSTS FOR THE METHANOL SYNTHESIS IN COMPACT MULTITUBULAR REACTORS**
*[1]Politecnico di Milano, Milano, Italy*
*[2]Total Refining & Chemicals, La Défense, France*
*[3]Norwegian University of Science and Technology, Trondheim, Norway*
*[4]SINTEF Materials and Chemistry, Trondheim, Norway*

**14.40**
**OP-II-3**
Bianchi E.[1], Visconti C.[2], Groppi G.[2], Schwieger W.[1], Tronconi E.[2], **Freund H.[1]**
**ENHANCING THE HEAT TRANSFER WITHIN CATALYTIC REACTORS BY OPTIMIZATION OF NOVEL STRUCTURED SUPPORTS**
*[1]Friedrich-Alexander-University Erlangen-Nürnberg, Erlangen, Germany*
*[2]Dipartimento di Energia, Politecnico di Milano, Milano, Italy*

**15.00**
**OP-II-4**
**Iordache I.[1],** Schitea D.[1], Iordache M.[2], Marinoiu A.[1]
**SONOCHEMICAL REACTORS IN ENVIRONMENTAL APPLICATIONS**
*[1]National Research and Development Institute for Cryogenics and Isotopic Technologies - ICIT, National Hydrogen and Fuel Cell Center, Rm. Valcea, Romania*
*[2]National Research & Development Institute for Industrial Ecology – ECOIND, Valcea, Romania*

**15.20**
**OP-II-5**
Khakharia P.[1], de Vries T.[2], Sigurbjörnsson Ó.[3], **Schuurbiers C.[1]**
**REACTOR DEVELOPMENT FOR UTILIZATION OF $CO_2$: CASE STUDY OF PRODUCING CYCLIC CARBONATES**
*[1]TNO, Delft, The Netherlands*
*[2]FeyeCon D&I, Weesp, The Netherlands*
*[3]Carbon Recycling International, Reykjavík, Iceland*

**15.40**
**OP-II-6**
**Härting H.,** Schubert M.
**HYDROGENATION OF ALPHA-METHYLSTYRENE IN AN INCLINED ROTATING FIXED BED REACTOR**
*Helmholtz-Zentrum Dresden-Rossendorf, Dresden, Germany*

***16.00 Coffee break***

## Afternoon Session
## COMMISSIEKAMER Hall

**ORAL PRESENTATIONS**

**Section II.**
**Chemical Reaction Engineering and Reactors Design – Novel Approaches, Modeling, Scale-Up, Optimization**

Mathematical Simulation and CFD Studies of Chemical Reactors
New Designs of Chemical Reactors (e.g. Structured Reactors, Membrane Reactors, Microreactors)
Novel Approaches in Chemical Reaction Processes Engineering (e.g. Microwave/Induction Heated Reactors, Ultrasonic Reactors, Unsteady-State Forcing and Sorption Enhancement in Chemical Reactors, Multifunctional Reactors)

***Chairperson: Professor Mikhail Sinev, Russia***

**16.00**
**OP-II-7**
**Giorno L.**
**BIOCATALYTIC MEMBRANE REACTORS: STRATEGIES TO PRESERVE ENZYME LIFE TIME BY CONTROLLING MEMBRANE FOULING**
*Consiglio Nazionale delle Ricerche - Istituto per la Tecnologia delle Membrane, Rende (CS), Italy*

**16.20**
**OP-II-8**
**Klenov O.P.[1],** Makarshin L.[1], Gribovskiy A.[1,2], Andreev D.[1], Parmon V.[1,2]
**CFD MODELING OF COMPACT METHANOL REFORMER**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Novosibirsk State University, Novosibirsk, Russia*

**16.40**
**OP-II-9**
**Van Cauwenberge D.,** Schietekat C.M., Van Geem K.M., Marin G.B.
**CFD-BASED DESIGN OF 3D PYROLYSIS REACTORS: RANS vs. LES**
*Ghent University, Ghent, Belgium*

**17.00**
**OP-II-10**
**Constantino D.M.,** Pereira C.S., Rodrigues A.E.
**FIXED BED ADSORPTIVE REACTOR FOR BUTYL ACRYLATE SYNTHESIS**
*University of Porto, Faculty of Engineering, Porto, Portugal*

**17.20**
**OP-II-11**
**Spallina V.,** van Sint Annaland M., Gallucci F.
**COMPARISON OF ADVANCED PROCESSES BASED ON CHEMICAL LOOPING AND MEMBRANE SEPARATION FULLY INTEGRATED IN AN $H_2$ PRODUCTION PLANT WITH $CO_2$ CAPTURE**
*Eindhoven University of Technology, Eindhoven, The Netherlands*

**17.40**
**OP-II-12**
**Molga E.**
**SORPTION-ENHANCED STEAM-METHANE REFORMING WITH SIMULTANEOUS SEQUESTRATION OF $CO_2$ ON FLY ASHES: MODELLING OF REACTORS OF DIFFERENT TYPE**
*Warsaw University of Technology, Chemical and Process Engineering Department, Warsaw, Poland*

***18.30 Guide Excursion around Delft***

## September 24, Wednesday

## Morning Session
## SENAATSZAAL Hall

## PLENARY LECTURES

***Chairperson: Professor Dan Luss, USA***

**9.00**

**PL-3** **J.A.M. Hans Kuipers**
**RECENT ADVANCES IN THE DIRECT NUMERICAL SIMULATION (DNS) OF MASS, MOMENTUM AND HEAT TRANSFER IN MULTIPHASE CHEMICAL REACTORS**
*Department of Chemical Engineering and Chemistry, Eindhoven University of Technology, The Netherlands*

**10.00**

**PL-4** **Alírio E. Rodrigues**
**SORPTION ENHANCEMENT OF CATALYTIC REACTIONS**
*Department of Chemical Engineering, University of Porto, Portugal*

***11.00 Coffee-break***

## KEYNOTE LECTURES

***Chairperson: Professor Enrico Tronconi, Italy***

**11.30**

**KL-5** **Giorgos D. Stefanidis**
**MICROWAVE-ASSISTED REACTION AND SEPARATION SYSTEMS**
*Delft University of Technology, Department of Process and Energy, the Netherlands*

**12.00**

**KL-6** **Asterios Gavriilidis**
***MICROREACTION TECHNOLOGY FOR CATALYTIC PROCESS DESIGN***
*Department of Chemical Engineering, University College London, Great Britain*

***12.30 Lunch***

## Afternoon Session
## SENAATSZAAL Hall

### ORAL PRESENTATIONS

### Section III.
### Chemical Reactors and Technologies for Emerging Applications
Environmental Protection and Utilization of Wastes
Processing of Biomass and Renewable Feedstocks
Production of Novel Nano-Structured Carbon Materials

***Chairperson: Professor Ioan Iordache, Romania***

**14.00**
**OP-III-1**
**Kolb G.,** Tiemann D., Ziogas A., Schuerer J.
**STEAM REFORMING OF POLYALCOHOLS AS A HYDROGEN SOURCE FOR FUEL CELLS IN MICROCHANNEL REACTORS OF THE kW SCALE**
*Fraunhofer ICT-IMM, Mainz, Germany*

**14.20**
**OP-III-2**
**Sturm G.,** Stankiewicz A., Stefanidis G.
**PLASMA GASIFICATION OF SANITATION BIOMASS**
*Delft University of Technology, Delft, The Netherlands*

**14.40**
**OP-III-3**
**Cannilla C.[1],** Bonura G.[1], Frusteri L.[2], Frusteri F.[1]
**BATCH REACTOR COUPLED WITH WATER PERMSELECTIVE MEMBRANE: STUDY OF GLYCEROL ETHERIFICATION REACTION WITH BUTANOL**
*[1]CNR-ITAE "Nicola Giordano", Messina, Italy*
*[2]Dipartimento di Ingegneria Elettronica, Chimica ed Ingegneria Industriale, Messina, Italy*

**15.00**
**OP-III-4**
**Ruoppolo G.[1],** Brachi P.[2], Picarelli A.[1], Miccio F.[1,3], Chirone R.[1]
**PRIMARY CATALYSTS FOR FLUIDIZED BED GASIFICATION OF BIOMASS AND WASTES**
*[1]Istituto di Ricerche sulla Combustione_CNR, Napoli, Italy*
*[2]Dipartimento di Ingegneria Industriale, University of Salerno, Salerno, Italy*
*[3]Istituto di Scienza e Tecnologia dei Materiali Ceramici, Napoli, Italy*

**15.20**
**OP-III-5**
**Hancsók J.[1],** Eller Z.[1], Tóth C.[1], Varga Z.[1], Holló A.[2], Varga G.[2]
**FUELS FROM NATURAL TRIGLYCERIDES**
*[1]University of Pannonia, Veszprem, Hungary*
*[2]MOL Hungarian Oil- and Gas Company Plc., Százhalombatta, Hungary*

**15.40**
**OP-III-6**
**Eller Z.**, Noé I.B., Hancsók J.
**BIOJET FUEL FROM KEROSENE/COCONUT OIL MIXTURES.**
*University of Pannonia, Veszprém, Hungary*

***16.00 Coffee-break***

## Afternoon Session
## SENAATSZAAL Hall

**ORAL PRESENTATIONS**

**Section III.**
**Chemical Reactors and Technologies for Emerging Applications**
Environmental Protection and Utilization of Wastes
Processing of Biomass and Renewable Feedstocks
Production of Novel Nano-Structured Carbon Materials

***Chairperson: Professor Ahmet Kerim Avci, Turkey***

**16.20**
**OP-III-7**
**Sotenko M.,** Coles S., Hamilton-Jones A., Kirwan K.
**OPTIMIZATION OF EXTRACTION AND BACTERIAL DEGRADATION OF BIOMASS IN A STIRRED TANK REACTOR**
*University of Warwick, Coventry, UK*

**16.40**
**OP-III-8**
**Yildiz G.[1],** Ronsse F.[1], van Geem K.[1], van Duren R.[2], Kersten S.R.[3], Prins W.[1]
**EFFECT OF BIOMASS ORIGINATED ASH IN CATALYTIC FAST PYROLYSIS OF BIOMASS**
[1]*Ghent University, Ghent, Belgium*
[2]*Albemarle Catalysts Company BV, Amsterdam, The Netherlands*
[3]*University of Twente, Twente, The Netherlands*

***17.00 Poster Session***

## Afternoon Session
## COMMISSIEKAMER Hall

### ORAL PRESENTATIONS

**Section I.**
**Advances in Chemical Reactors Fundamentals**
Chemical Reactions Kinetics
Energy & Mass Transfer in Chemical Reactors
Fundamentals of Hydrodynamics and Fluid Flow in Chemical Reactors
Specialized Software for Development of Chemical Reactors and Flow-Sheeting of Reactive Processes

***Chairperson: Dr. Anna Pawlaczyk, Poland***

**14.00**
**OP-I-13**
**Medrano J.,** Voncken R., Roghair I., van Sint Annaland M., Gallucci F.
**EXPERIMENTAL AND NUMERICAL STUDY ON GAS POCKETS SURROUNDING HORIZONTALLY IMMERSED MEMBRANES IN FLUIDIZED BEDS**
*Eindhoven University of Technology, Eindhoven, The Netherlands*

**Section II.**
**Chemical Reaction Engineering and Reactors Design – Novel Approaches, Modeling, Scale-Up, Optimization**
Mathematical Simulation and CFD Studies of Chemical Reactors
New Designs of Chemical Reactors (e.g. Structured Reactors, Membrane Reactors, Microreactors)
Novel Approaches in Chemical Reaction Processes Engineering (e.g. Microwave/Induction Heated Reactors, Ultrasonic Reactors, Unsteady-State Forcing and Sorption Enhancement in Chemical Reactors, Multifunctional Reactors)

**14.20**
**OP-II-13**
Taran O.P.[1,2], Zagoruiko A.N.[1,3], **Ayusheev A.B.[1],** Yashnik S.A.[1], Prihod'ko R.V.[4], Goncharuk V.V.[4], Ismagilov Z.R.[1,5], Parmon V.N.[1,6]
**WET PEROXIDE OXIDATION OVER Cu-ZSM-5 and Fe-ZSM-5 CATALYSTS. KINETICS STUDY IN BATCH AND FLOW REACTORS**
[1]*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
[2]*Novosibirsk State Technical University*, Novosibirsk, *Russia*
[3]*Tomsk Polytechnic University, Tomsk, Russia*
[4]*Dumansky Institute of Colloid and Water Chemistry NASU, Kiev, Ukraine*
[5]*Institute of Coal Chemistry and Material Sciences SB RAS, Kemerovo, Russia*
[6]*Novosibirsk State University, Novosibirsk, Russia*

**14.40**
**OP-II-14**
Chandana L., **Manoj Kumar Reddy P.,** Subrahmanyam C.
**ATMOSPHERIC PLASMA JET FOR METHYLENE BLUE DEGRADATION**
*Indian Institute of Technology Hyderabad (IIT Hyderabad), Hyderabad, India*

**15.00**
**OP-II-15**
**Vernikovskaya N.V.[1,2],** Dobrynkin N.M.[1], Chumachenko V.A.[1]
**MATHEMATICAL MODELING OF THE FILTRATION PROCESS OF CATALYST SUSPENSIONS WITH KNOWN PARTICLE SIZE DISTRIBUTION: ACCOUNTING FOR DYNAMICS OF THE CAKE GROWTH AND FILTER PORE BLOCKAGE**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Novosibirsk State University, Novosibirsk, Russia*

**15.20**
**OP-II-16**
Tezcan F.I, **Avci A.K.**
**PARAMETRIC ANALYSIS OF OXIDATIVE COUPLING OF METHANE IN A MICROCHANNEL REACTOR**
*Department of Chemical Engineering Bogazici University, Istambul, Turkey*

**15.40**
**OP-II-17**
**Möller K.[1],** Mthombeni-Möller B.[1], Knottenbelt C.[2], Mdeleni M.[2]
**SIMULATION OF THE CONVERSION OF OLEFINS TO DISTILLATES**
*[1]University of Cape Town, Cape Town, South Africa*
*[2]The Petroleum Oil and Gas Corporation of South Africa (SOC), Ltd., (PetroSA), Cape Town, South Africa*

***16.00 Coffee-break***

***Chairperson: Dr. Hannsjoerg Freund, Germany***

**16.20**
**OP-II-18**
**Patrascu M.,** Sheintuch M.
**DEMONSTRATION AND DESIGN PRINCIPLES OF AN EFFICIENT SCALED DOWN AUTOTHERMAL OR HEATED MEMBRANE REFORMER FOR PURE HYDROGEN PRODUCTION**
*Technion – Israel Institute of Technology, Haifa, Israel*

**16.40**
**OP-II-19**
**Vidal Vázquez F.,** Simell P., Pennanen J., Koskinen-Soivi M.
**REACTOR DESIGN AND TESTING OF CATALYSTS USED FOR HYDROGEN PRODUCTION BY METHANOL STEAM REFORMING FOR POLYMERIC ELECTROLYTE MEMBRANE FUEL CELLS APPLICATIONS**
*VTT Technical Research Centre of Finland, Helsinki, Finland*

***17.00 Poster Session***

## September 25, Thursday

## Morning Session
## SENAATSZAAL Hall

## PLENARY LECTURES

***Chairperson: Professor Alírio E. Rodrigues, Portugal***

**9.00**

**PL-5** **Liang-Shih Fan**
**CHEMICAL LOOPING TECHNOLOGY – METAL OXIDES, REACTORS AND PROCESSES**
*The Ohio State University, Columbus, Ohio, USA*

**10.00**

**PL-6** **Tapio Salmi**
**CHEMICAL REACTION ENGINEERING OF THE LOW-TEMPERATURE TRANSFORMATION OF BIOMASS**
*Åbo Akademi, Turku, Finland*

***11.00 Coffee-break***

## KEYNOTE LECTURES

***Chairperson: Professor Francesco Frusteri, Italy***

**11.30**

**KL-7** **Erik Heeres**
**CATALYTIC BIOMASS CONVERSIONS**
*Department of Chemical Engineering, University of Groningen, the Netherlands*

**12.00**

**KL-8** Khadzhiev S.N., Kadiev H.M., Kolesnichenko N.V., **Anton Maximov**
**NEW TECHNOLOGIES FOR NATURAL GAS AND HEAVY OIL PROCESSING**
*A.V. Topchiev Institute of Petrochemical Synthesis RAS, Moscow, Russia*

***12.30 Lunch***

## Afternoon Session
## SENAATSZAAL Hall

### ORAL PRESENTATIONS

### Section III.
### Chemical Reactors and Technologies for Emerging Applications

Environmental Protection and Utilization of Wastes
Processing of Biomass and Renewable Feedstocks
Production of Novel Nano-Structured Carbon Materials

***Chairperson: Professor Jenő Hancsók, Hungary***

**14.00**
**OP-III-9**
**Kihlman J.[1],** Sánchez Sánchez C.[2], Simell P.[1], Solantausta Y.[1]
**CATALYTIC STEAM REFORMING OF BIO-OIL AQUEOUS FRACTION WITH LABORATORY SCALE REACTOR**
*[1]VTT Technical Research Centre of Finland, Espoo, Finland*
*[2]Aalto University School of Science and Technology, Espoo, Finland*

**14.20**
**OP-III-10**
Salzano E.[1]**,** Russo V.[2], **Tesser R.[2],** Di Serio M.[2]
**BEST OPERATING CONDITIONS FOR THE EPOXYDATION OF VEGETABLE OIL IN FED-BATCH REACTOR**
*[1]Istituto di Ricerche sulla Combustione – CNR, Napoli, Italy*
*[2]Dipartimento di Chimica, Università di Napoli "Federico II", Napoli, Italy*

**14.40**
**OP-III-11**
Irabien A.[1], Castaño P.[2], **Albo J.[2]**
**ELECTROCATALYSIS FOR CARBON DIOXIDE RECYCLING**
*[1]Universidad de Cantabria, Santander, Spain*
*[2]Universidad del Pais Vasco/Euskal Herriko Uniberstsitatea, Bilbao, Spain*

**15.00**
**OP-III-12**
**Reyero I.[1],** Moral A.[1], Arzamendi G.[1], Radosevic J.[2], Sanz O.[2], Montes M.[2], Gandía L.[1]
**SUPPORTED AND STRUCTURED CATALYSTS BASED ON CALCIUM AND CERIUM FOR THE PRODUCTION OF BIODIESEL**
*[1]Universidad Pública de Navarra, Pamplona, Spain*
*[2]Universidad del País Vasco, Departamento de Química Aplicada, San Sebastián, Spain*

## Section IV

## Advanced Processing of Fossil Hydrocarbon Feedstocks

Modern Reactive Technologies for Natural Gas, Oil and Coal Processing
Chemical Processes for intensification of Oil Production
Natural Chemical Reactors for In-Situ Processing of Oil and Coal in Deposits
Chemical Reactors and Processes for Treatment of Heavy Hydrocarbon Feedstock and Shale Oil

***Chairperson: Professor Anton Maximov, Russia***

**15.20**
**OP-IV-1**
**Porsin A.[1],** Kulikov A.[1], Dalyuk I.[2], Rogozhnikov V.[1], Kochergin V.[2]
**CATALYTIC REACTOR FOR COMBUSTION OF LIQUID FUEL WITH CATALYST SUPPORTED ON METALLIC GAUZE**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Siberian State Transport University, Novosibirsk, Russia*

**15.40**
**OP-IV-2**
**Arutyunov V.S.[1],** Savchenko V.I.[2], Magomedov R.N.[2], Nikitin A.V.[1], Fokin I.G.[2]
**NEW CONCEPTIONS FOR LOW-SCALE GTL**
*[1]Semenov Institute of Chemical Physics RAS, Moscow, Russia*
*[2]Institute of Problems of Chemical Physics RAS, Chernogolovka, Moscow region, Russia*

***16.00 Coffee-break***

**16.20**
**OP-IV-3**
**Kirgina M.,** Ivanchina E., Chekantsev N., Sharova E.
**COMPLEX MODELING SYSTEM FOR OPTIMIZATION OF REACTION PROCESSES OF TRADE GASOLINE PRODUCTION**
*Tomsk Polytechnic University, Tomsk, Russia*

**16.40**
**OP-IV-4**
**Hart A.[1]**, Al-Marshed A.[1], Leeke G.A.[1], Greaves M.A.[2], Wood J.[1]
**A COMPARATIVE STUDY OF FIXED-BED AND DISPERSED CATALYTIC UPGRADING OF HEAVY CRUDE OILS USING-CAPRI**
*[1]School of Chemical Engineering, University of Birmingham, Birmingham, UK*
*[2]IOR Research Group, Department of Chemical Engineering, University of Bath, Bath, UK*

***17.00 Conference closing***

## Afternoon Session
## COMMISSIEKAMER Hall

### ORAL PRESENTATIONS

***Chairperson: Professor Valeriy Shvets, Russia***

**14.00**
**Yakimenko O.**
**BÜCHI PILOT PLANTS AND REACTOR SYSTEMS (**Presentation of **Büchi AG** Company)
*Pharmcontract LLC, Moscow, Russia*

## Section on PHOTOCATALYTIC REACTORS

***Chairperson: Professor J. Ruud van Ommen, The Netherlands***

**14.20**
**OP-Ph-1**
**Lammertink R.,** Visan A., Rafieian D., Ogieglo W.
**FAST DEGRADATION IN IMMOBILIZED PHOTOCATALYTIC MICROREACTORS**
*University of Twente, Enschede, The Netherlands*

**14.40**
**OP-Ph-2**
**Marugán J.,** Casado C., Timmers R., van Grieken R.
**COUPLING RADIATION TRANSPORT WITH CFD MODELLING FOR THE SIMULATION OF PHOTOCATALYTIC REACTORS**
*Universidad Rey Juan Carlos, Madrid, Spain*

**15.00**
**OP-Ph-3**
Marugán J.[1], **Casado C.[1],** Timmers R.[1], Sergejevs A.[2], Clarke C.T.[2], Beasley A.[2], Allsopp D.W.E.[2], Bowen C.R.[2], van Grieken R.[1]
**UV LED PROTOTYPE PHOTOREACTOR FOR STANDARDISED PHOTOCATALYTIC ACTIVITY TESTS**
[1]*Universidad Rey Juan Carlos, Madrid, Spain*
[2]*University of Bath, Bath, UK*

**15.20**
**OP-Ph-4**
**Valades-Pelayo P.J.,** Moreira J., Serrano B., de Lasa H.I.
**THE PHASE FUNCTION ON THE RADIATION AND ABSORPTION FIELD IN A PHOTO-CREC WATER-II REACTOR**
*The University of Western Ontario, London, Canada*

**15.40**
**OP-Ph-5**
**Mul G.,** Schut L., Romao J., Erler X.
**EFFECTS OF AGGLOMERATE FORMATION ON PERFORMANCE OF PHOTOCATALYTIC SLURRY REACTORS**
*University of Twente, Enschede, The Netherlands*

***16.00 Coffee-break***

***Chairperson: Professor Freek Kapteijn, The Netherlands***

**16.20**
**OP-Ph-6**
**Leblebici M.[1],** Jamali A.[1], Janssens N.[2], Martens J.A.[2], Van Gerven T.[1]
**PHOTOCATALYTIC DEGRADATION OF PHENOL USING LEDs - MODELLING AND CONTINUOUS REACTOR DESIGN**
*[1]Process Engineering for Sustainable Systems, Department of Chemical Engineering, KU Leuven, Leuven, Belgium*
*[2]Center for Surface Chemistry and Catalysis, Department of Microbial and Molecular Systems,*
*KU Leuven, Leuven, Belgium*

**16.40**
**OP-Ph-7**
**van Ommen J.R.,** Motegh M., Appel P.W., Kreutzer M.T.
**A SCALE-UP CASE STUDY OF A MULTIPHASE PHOTOCATALYTIC REACTOR - DEGRADATION OF CYANIDE IN WATER OVER $TiO_2$**
*Delft University of Technology, Delft, The Netherlands*

***17.00 Conference closing***

## Poster presentations

**PP-1.** **Abas N.,** Zailan A., Zainab I.
**A TECHNOLOGY: VALUE-ADDED DERIVATIVES OF GLYCEROL FROM BIODIESEL INDUSTRY**
*Malaysian Palm Oil Board, Selangor, Malaysia*

**PP-2.** **Abd ElHafiz D,** Ebiad M.
**HYDROGEN PRODUCTION FROM BIO-RENEWABLE FEEDSTOCK IN FIXED-BED REACTOR OVER Co/Ce-La CATALYST**
*Egyptian Petroleum Research Institute, Cairo, Egypt*

**PP-3.** **Al-Dughaither A.[1,2],** de Lasa Hugo I.[1]
**Di-METHYL ETHER CONVERSION INTO OLEFINS OVER HZSM-5: EFFECT OF $SiO_2/Al_2O_3$ RATIO ON SURFACE CHEMISTRY AND REACTIVITY PROPERTIES**
*[1]Western University, London, Ontario, Canada*
*[2]SABIC Technology Center, Riyadh, Saudi Arabia*

**PP-4.** **Alqahtani A.M.,** Iliyas A.
**QUALITY BY DESIGN APPLICATION IN PETROCHEMICALS TECHNOLOGY DEVELOPMENT**
*Saudi Basic Industries Corporation, Riyadh , Saudi Arabia*

**PP-5.** **Aman D.,** Abd El-Hafiz D., Ebiad M.
**RENEWABLE HYDROGEN PRODUCTION FROM BIODIESEL BY-PRODUCT USING $LaNiO_3$ and $LaCoO_3$ NANO PEROVSKITE**
*Egyptian Petroleum Research Institute, Cairo, Egypt*

**PP-6.** Bouaid A., Vázquez R., Martinez M., **Aracil J.**
**BIODIESEL PRODUCTION FROM USED FRYING OILS. EFFECT OF FREE FATTY ACIDS CONTENTS ON BIODIESEL YIELD AND PURITY**
*University of Complutense, Madrid, Spain*

**PP-7.** **Atong D.[1],** Nasorn W.[2], Sornkade P.[1], Sricharoenchaikul V.[2]
**PRODUCT DISTRIBUTION FROM MICROWAVE INDUCED PYROLYSIS OF DRIED BLACK LIQUOR**
*[1]National Metal and Materials Technology Center, Pathumthani, Thailand*
*[2]Chulalongkorn University, Bangkok, Thailand*

**PP-8.** Berchiche M.[1], Rahoui N.[2], Allal H.[2], Fellahi M.[2], Cherif R.[2], **Maachi R.[1]**
**A NEW CORRELATION FOR MEAN PARTICLE DIAMETER ESTIMATION INSIDE A BUBBLING FLUIDIZED BED REACTOR**
*[1]Université des Sciences et de la Technologie Houari-boumedienne, Algiers, Algeria*
*[2]Ecole Militaire Polytechnique, Algiers, Algeria*

**PP-9.** **Baladincz P.,** Hancsók J.
**FUEL FROM WASTE ANIMAL FATS**
*University of Pannonia, Veszprem, Hungary*

**PP-10.** Barelko V.V., Kiryukhin D.P., Kustsh P.P., Dorokhov V.G., **Bykov L.A.,** Aldoshin S.M.
**TECHNOLOGICAL BASIS AND APPARATUS EQUIPMENT FOR THE MANUFACTURING PROCESS OF NEW GLASS-POLYMER COMPOSITION MATERIALS USING THE TETRAFLUOROETHILENE OLIGOMERS (TELOMERS) AS A BINDER**
*Institute of Problems of Chemical Physics RAS, Chernogolovka, Moscow region, Russia*

**PP-11.** Barelko V.V.[1], Safonov O.G.[2], **Bykova N.V.[1],** Dorokhov V.G.[1], Bykov L.A.[1], Yapaskurt V.O.[2], Shapovalov Yu.B.[2]
**DEVELOPMENT OF THE CONCEPT OF THE EARTH'S CRUST AS A "GIANT CATALYTIC REACTOR" (EXPERIMENTAL MODELING OF THE HETEROGENEOUS-CATALYTIC MECHANISMS OF FLUID TRANSFORMATION IN THE EARTH'S CRUST EXEMPLIFIED BY THE METHANE VAPOR CONVERSION ON "SERPENTINITE")**
*[1]Institute of Problems of Chemical Physics RAS, Chernogolovka, Moscow region, Russia*
*[2]Institute of Experimental Mineralogy RAS, Chernogolovka, Moscow region, Russia*

**PP-12.** **Belinskaya N.S.,** Ivanchina E.D., Ivashkina E.N., Silko G.Y., Frantsina E.V., Kiseleva S.V.
**MATHEMATICAL MODELLING OF THE CATALYTIC HYDRODEWAXING OF DIESEL FUELS**
*Tomsk Polytechnic University, Tomsk, Russia*

**PP-13.** **Belkacemi K.,** Pillai S., Abidli A., Hamoudi S.
**METHYLTRIOXORHENIUM SUPPORTED ON MESOPOROUS $Al_2O_3$ PROMOTED WITH $ZnCl_2$ AS A GREEN HETEROGENEOUS CATALYST FOR METHYLOLEATE SELF-METATHESIS: REACTION KINETICS**
*Université Laval, Québec-City, Canada*

**PP-14.** **Bondareva V.,** Shadrina L., Ovchinnikova E., Sobolev V.
**ETHANE OXIDATIVE DEHYDROGENATION. REACTION KINETICS**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**PP-15.** **Boukha Z.,** Ayastuy J., Iglesias-González A., de la Torre U., Pereda-Ayo B., López-Fonseca R., Gutiérrez-Ortiz M., González-Velasco J.
**ALUMINA-WASHCOATED STAINLESS STEEL MICROGRIDS: NEW DESIGN OF MICROSTRUCTURED CATALYSTS FOR CATALYTIC APPLICATIONS**
*University of the Basque Country, Faculty of Science and Technology, Bilbao, Spain*

**PP-16.** **Bruk L.G.[1],** Ustyugov A.V.[1], Zubavichus Ya.V.[2], Tkachenko O.P.[3], Katsman E.A.[1], Murzin V.Yu.[2], Kustov L.M.[3], Temkin O.N.[1]
**KINETIC MODEL AND MECHANISM OF LOW-TEMPERATURE CARBON MONOXIDE OXIDATION BY OXYGEN**
*[1]Lomonosov Moscow University of Fine Chemical Technology, Moscow, Russia*
*[2]National Research Center "Kurchatov Institute", Moscow, Russia*
*[3]N.D. Zelinsky Institute of Organic Chemistry RAS, Moscow, Russia*

**PP-17.** **Bártová Š.,** Kunešová K., Kůs P., Kořenková H., Vonková K.
**REDUCTION OF TOC IN INDUSTRIAL WATERS BY THE MEANS OF UV RADIATION**
*Research Centre Řež, Husinec-Řež, Czech Republic*

**PP-18.** **Bártová Š.[1]**, Kunešová K.[1], Kůs P.[1], Vonková K.[1], Skala M.[2], Moucha T.[2]
**UTILIZATION OF REVERSE OSMOSIS FOR THE BORIC ACID RECOVERY FROM PRIMARY COOLANT AT NUCLEAR POWER PLANTS**
*[1]Research Centre Řež, Husinec-Řež, Czech Republic*
*[2]Institute of Chemical Technology Prague, Prague, Czech Republic*

**PP-19.** **Bártová Š.[1],** Mráček D.[2], Kočí P.2, Marek M.[2], Choi J.[3]
**AMMONIA REACTIONS WITH THE STORED OXYGEN IN A COMMERCIAL LEAN NOx TRAP CATALYST**
*[1]Research Centre Řež, Husinec-Řež, Czech Republic*
*[2]Institute of Chemical Technology Prague, Prague, Czech Republic*
*[3]Oak-Ridge National Laboratory, Knoxville, USA*

**PP-20.** Barelko V.V.[1], Bykov L.A.[1], Kalilin V.V.[2], Kurbatov M.G.[2], **Chepelenko V.N.[2]**
**STRATEGIC DIRECTION IN THE DEVELOPMENT OF HYDROGEN FUEL COMPLEX IN TRANSPORT, AUTONOMOUS ENERGY AND SYSTEMS OF SPECIAL PURPOSES. TECHNOLOGICAL SOLUTIONS IN THE PRODUCTION OF HYPERFINE HYDROGEN-FILTER FOILS**
*[1]Institute of Problems of Chemical Physics RAS, Chernogolovka, Moscow region, Russia*
*[2]Moscow Plant of Special Alloys, Moscow, Russia*

**PP-21.** **Carletti C.A.[1],** Grénman H.[1], De Blasio C.[2], Salmi T.[1], Murzin D.[1], Westerlund T.[1]
**A NOVEL REACTOR SETUP FOR STUDYING LIMESTONE DISSOLUTION KINETICS**
*[1]Åbo Akademi University, Turku, Finland*
*[2]Aalto University School of Science and Technology, Espoo, Finland*

**PP-22.** **Chalupka K.A.[1,3],** Casale S.[2], Onfroy T.[2], Grams J.[3], Rynkowski J.[3], Dzwigaj S.[2]
**THE NOVEL Ni-CONTAINING ZEOLITE CATALYSTS FOR PARTIAL OXIDATION OF METHANE (POM)**
*[1]Lodz University of Technology, Lodz, Poland*
*[2]Laboratoire de Reactivite de Surface, CNRS, Paris, France*
*[3]Institute of General and Ecological Chemistry, Lodz, Poland*

**PP-23.** Chumakov G.A.[2,3], **Chumakova N.A.[1,3]**, Lashina E.A.[1,3]
**MODELING THE COMPLEX DYNAMICS OF HETEROGENEOUS CATALYTIC REACTIOINS**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Sobolev Institute of Mathematics SB RAS, Novosibirsk, Russia*
*[3]Novosibirsk State University, Novosibirsk, Russia*

**PP-24.** **Danilova M.,** Fedorova Z., Zaikovskii V., Porsin A., Kirillov V., Krieger T.
**COMBINED STEAM AND CARBON DIOXIDE REFORMING OF METHANE TO SYNTHESIS GAS OVER POROUS NICKEL BASED CATALYSTS**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**PP-25.** **Davletbaeva I.M.,** Gumerov A.M., Davletbaev R.S.
**MATHEMATICAL MODELING OF PROCESS OF NANOSTRUCTURIZATION OF POLYURETHANES**
*Kazan National Research Technological University, Kazan, Russia*

**PP-26.** Dolganova I.O., Ivashkina E.N., Ivanchina E.D., **Belinskaya N.S.**
**REACTOR-REGENERATOR SYSTEM JOINT WORK OPTIMIZATION IN BENZENE ALKYLATION WITH HIGHER OLEFINS UNIT**
*Tomsk Polytechnic University, Tomsk, Russia*

**PP-27.** Dossumov K., **Yergaziyeva G.,** Telbaeva M.
**COPPER BASED CATALYSTS FOR RECEIPT OF ETHYLENE FROM BIOETHANOL**
*Institute for Problem of Combustion, Al-Farabi Kazakh National University, Almaty, Kazakhstan*

**PP-28.** Dossumov K.D., Suyunbaev U., Mironenko A.V., **Yergaziyeva G.**
**REFORMING OF METHANE WITH CARBON DIOXIDE**
*Al-Farabi Kazakh National University, Centre of Physical and Chemical Methods of Investigation and Analysis, Almaty, Kazakhstan*

**PP-29.** Egorova S., Lamberov A., Egorov A., **Solovev S.,** Kataev A., Bekmukhamedov G.
**NUMERICAL SIMULATION OF THE FLUIDIZED BED CHEMICAL REACTOR WITH STRUCTURAL ELEMENTS OPTIMIZATION**
*Kazan (Volga region) Federal University, Kazan, Russia*

**PP-30.** Epelde E., **Pérez Uriarte P.,** Gamero M., Aguayo A., Bilbao J., Gayubo A.
**KINETIC MODELLING FOR THE TRANSFORMATION OF 1-BUTENE ON A K MODIFIED HZSM-5 ZEOLITE CATALYST**
*University Basque Country, Bilbao, Spain*

**PP-31.** **Estévez R.,** Lopez-Pedrajas S., Luna D., Bautista F.
**PRODUCTION OF ACROLEIN FROM GLYCEROL IN LIQUID PHASE ON HETEROGENEOUS CATALYSTS**
*University of Cordoba, Cordoba, Spain*

**PP-32.** **Ezinkwo G.[1],** Tretjakov V.P.[1], Talyshinsky R.M.[2], Ilolov A.[2]
**STRATEGIC AND FUNDAMENTAL PROCESS FOR THE PRODUCTION OF BUTADIENE AND ISOPRENE VIA THE CONVERSION OF LOWER ALCOHOLS**
*[1]M.V. Lomonosov Moscow State Academy of Fine Chemical Technology, Moscow, Russia*
*[2]A.V. Topchiev Institute of Petrochemical Processes RAS, Moscow, Moscow, Russia*

**PP-33.** Piumetti M., Russo N., **Fino D.**
**COMPLETE OXIDATION OF VOLATILE ORGANIC COMPOUNDS OVER MANGANESE OXIDE CATALYSTS**
*Politecnico di Torino, Torino, Italy*

**PP-34.** **Gancarczyk A.,** Piatek M.
**SOLID FOAMS: NOVEL CATALYST SUPPORT IN TRICKLE BED REACTORS**
*Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland*

**PP-35.** **Gartman T.[1],** Sovetin F.[1], Proskuro E.[1], Shvets V.[1], Kozlovskiy R.[1], Suchkov Y.[1], Sapunov V.[1], Loktev A.[2], Komissarenko D.[2], Dedov A.[2]
**KINETICS OF CONSECUTIVE-PARALLEL REACTIONS IN A THIN LAYER OF A HETEROGENEOUS CATALYST**
*[1]D. Mendeleyev University of Chemical Technology of Russia, Moscow, Russia*
*[2]Gubkin Russian State University of Oil and Gas, Moscow, Russia*

**PP-36.** **Ghaloum N.**
**COKE AND METAL INVESTIGATION AFTER OXIDATIVE AND NON-OXIDATIVE REGENERATION METHODS OF SPENT HYDROPROCESSING CATALYSTS**
*Petroleum Research Centre, Kuwait Institute for Scientific Research, Safat, Kuwait*

**PP-37.** Gomez Garcia M.A.[1], Dobrosz-Gomez I.[1], GilPavas E.[2], **Rynkowski J.**[3]
**GIBBS FREE ENERGY MINIMIZATION FOR THE CALCULATION OF EQUILIBRIUM SHIFT IN MEMBRANE REACTORS**
*[1]National University of Colombia, Manizales, Colombia*
*[2]EAFIT University,Medellin, Colombia*
*[3]Institute of General and Ecological Chemistry, Lodz, Poland*

**PP-38.** Gomez Garcia M.A.[1], Dobrosz-Gomez I.[1], GilPavas E.[2], **Rynkowski J.[3]**
**SIMULATION OF AN INDUSTRIAL ADIABATIC MULTI-BED CATALYTIC REACTOR FOR SULFUR DIOXIDE OXIDATION USING THE HETEROGENEOUS DUSTY GAS MODEL**
*[1]National University of Colombia, Manizales, Colombia*
*[2]EAFIT University, Medellin, Colombia*
*[3]Institute of General and Ecological Chemistry, Lodz, Poland*

**PP-39.** Gomez-Coma L.[1], **Albo J.[2],** Garea A.[1], Irabien A.[1]
**$CO_2$ CAPTURE USING POLYSULFONE MEMBRANE CONTACTOR AND [EMIM][AC] IONIC LIQUID**
*[1]Universidad de Cantabria, Santander, Spain*
*[2]Universidad del Pais Vasco/Euskal Herriko Uniberstsitatea, Bilbao, Spain*

**PP-40.** **Gumerov A.M.[1],** Davletbaev R.S.[2], Akhmetshina A.I.[1], Davletbaeva I.M.[1]
**SIMULATION OF SYNTHESIS OF OPTICALLY TRANSPARENT MESOPOROUS POLYMERS**
*[1]Kazan National Research Technical University, Kazan, Russia*
*[2]A.N. Tupolev Kazan National Research Technical University, Kazan, Russia*

**PP-41.** **Günay M.[1],** Odabaşi Ç.[2], Yildirim R.[2]
**ANALYSIS OF THE PAST PUBLISHED DATA ON WGS REACTION OVER Pt AND Au CATALYSTS BY DECISION TREES**
*[1]Istanbul Bilgi University, Istanbul, Turkey*
*[2]Department of Chemical Engineering Bogazici University, Istanbul, Turkey*

**PP-42.** **Hartmann V.L.**
**MODELING OF A DOUBLE-LAYER DESULFURIZATION REACTOR**
*LLC "NIAP-KATALIZATOR", Novomoskovsk, Russia*

**PP-43.** Hasan S.U., Mahajani S.M., **Malik R.K.**
**SELECTIVITY ENGINEERING WITH MULTI-SIDE DRAW HYBRID REACTIVE DISTILLATION COLUMN INVOLVING AZEOTROPIC SYSTEMS**
*Indian Institute of Technology, Bombay, Mumbai, India*

**PP-44.** **Hita I.,** Gutiérrez A., López G., Arandes J., Castaño P.
**HYDRODESULPHURIZATION OF SCRAP TIRE PYROLYSIS OIL (STPO) OVER A $NiMo/Al_2O_3$ CATALYST. EFFECT OF PRESSURE AND TEMPERATURE**
*University of the Basque Country, Faculty of Science and Technology, Bilbao, Spain*

**PP-45.** **Itkulova S.,** Zakumbaeva G., Akkulov A.
**BIMETALLIC CATALYSTS FOR PRODUCTION AND CONVERSION OF SYNGAS**
*D.V.Sokolsky Institute of Organic Catalysis and Electrochemistry, Almaty, Kazakhstan*

**PP-46.** Ivashkina E.N., Ivanchina E., Romanovskii R., **Frantsina E.,** Platonov V.
**CHANGING THE HYDROGEN-RICH GAS CIRCULATION RATIO WITH SAVING THE LIFETIME OF THE C9–C14 ALKANES DEHYDROGENATION CATALYST**
*Tomsk Polytechnic University, Tomsk, Russia*

**PP-47.** **Jodlowski P.J.[1],** Jedrzejczyk R.[2], Ochonska-Kryca J.[2], Knapik A.[2], Wach A.[2], Kuśtrowski P.[2], Stelmachowski P.[2], **Kolodziej A.[3,4],** Lojewska J.[2]
**REACTION RATE IN STRUCTURED REACTORS: ANALYTICAL METHODS FOR DETERMINATION OF CATALYST AMOUNT**
*[1]Cracow University of Technology, Kraków, Poland*
*[2]Jagiellonian University, Kraków, Poland*
*[3]Institute of Chemical Engineering, Gliwice, Poland*
*[4]Opole University of Technology, Opole, Poland*

**PP-48.** **Kancharla S.K.,** Mahajani S.M**.**
**GAS PHASE AND SURFACE REACTION KINETICS FOR $CCL_4$-$H_2$ SYSTEM IN TUBULAR CHEMICAL VAPOUR DEPOSITION REACTOR**
*Indian Institute of Technology, Bombay, India*

**PP-49.** **Kannan P.,** Shoaibi A.A., Srinivasakannan C.
**TEMPERATURE EFFECTS ON THE YIELD OF GASEOUS OLEFINS FROM WASTE POLYETHYLENE VIA FLASH PYROLYSIS**
*The Petroleum Institute, Abu Dhabi, United Arab Emirates*

**PP-50.** **Kazakov D.A.[1],** Vol'khin V.V.[1], Asnin L.D.[1], Kaczmarski K.[2]
**ENHANCEMENT OF OXYGEN GAS-LIQUID MASS TRANSFER IN THE PRESENCE OF HYDROPHOBIC NONWETTABLE PARTICLES**
*[1]Perm National Research Polytechnic University, Perm, Russia*
*[2]Rzeszow University of Technology, Rzeszow, Poland*

**PP-51.** **Khlebnikova E.,** Dolganova I., Belinskaya N., Ivashkina E., Bekker A.
**INTENSIFICATION OF REACTANTS MIXING DURING BENZENE ALKYLATION WITH ETHYLENE**
*Tomsk Polytechnic University,Tomsk, Russia*

**PP-52.** **Khodadadian F.,** Lakerveld R., Stankiewicz A.
**MODEL-BASED DESIGN OF A LED-BASED PHOTOCATALYTIC REACTOR**
*Delft University of Technology, Delft, The Netherlands*

**PP-53.** **Kikhtyanin O.[1]**, Vitvarová D.[2], Eliášová P.[2], Kubička D.[1]
**CATALYTIC PROPERTIES OF BEA AND MWW ZEOLITES IN ALDOL CONDENSATION OF FURFURAL AND ACETONE**
*[1]Research Institute of Inorganic Chemistry, RENTECH-UniCRE, Záluží-Litvinov, Czech Republic*
*[2]J. Heyrovský Institute of Physical Chemistry, Academy of Sciences of the Czech Republic, Prague, Czech Republic*

**PP-54.** Klenov O.P.[1], Chumakova N.A.[1,2], **Pokrovskaya S.A.[1,2]**, Noskov A.S.[1]
**MODELING OF MASS AND HEAT TRANSFER FOR HONEYCOMB CATALYSTS WITH CHANNELS OF DIFFERENT SHAPE**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Novosibirsk State University, Novosibirsk, Russia*

**PP-55.** **Kocemba I.L.**, Dlugolecka J., Rynkowski J.M.
**CARBON MONOXIDE AND HYDROGEN CO-ADSORPTION OVER PLATINUM CATALYST**
*Institute of General and Ecological Chemistry, Lodz, Poland*

**PP-56.** **Kozlovskiy R.**[1], Efimkin D.[1], Koshkin S.[1], Kozlovskiy I.[1], Kuznetsov A.[1], Beloded A.[1], Miniukova T.[2], Parmon V.[2], Shvets V.[1]
**BIO-PROPYLENE GLYCOL TECHNOLOGY FROM RENEWABLE SOURSE**
*[1]D. Mendeleyev University of Chemical Technology of Russia, Moscow, Russia*
*[2]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**PP-57.** **Kryca J.**[1,2], Jodłowski P.[3], Jędrzejczyk R.[1], Iwaniszyn M.[2], Piątek M.[2], Sitarz M.[4], Kołodziej A.[2,5], Łojewska J.[1]
**CHARACTERIZATION AND KINETIC STUDIES OF DeNO$_x$ REACTION OVER Cu-SSZ-13 SYNTHESIZED ON METALLIC FOAMS**
*[1]Jagiellonian University, Cracow, Poland*
*[2]Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland*
*[3]Cracow University of Technology, Cracow, Poland*
*[4]AGH University of Science and Technology, Cracow, Poland*
*[5]Opole University of Technology, Opole, Poland*

**PP-58.** **Leba A.,** Düşova Y., Avci A.K., Yildirim R.
**OCM REACTION OVER VARIOUS STRUCTURED FORMS OF Mn/Na$_2$WO$_4$/SiO$_2$ CATALYST**
*Department of Chemical Engineering Bogazici University, Istanbul, Turkey*

**PP-59.** **Laredo G.C.,** Castillo J.J., Cano Dominguez J.L.
**SEPARATION OF LINEAR AND BRANCHED PARAFFINS FROM A REAL FEED BY FIXED BED ADSORPTION USING A CARBON MOLECULAR SIEVE**
*Instituto Mexicano del Petroleo, Mexico City, Mexico*

**PP-60.** **Laredo G.C.,** Castillo J., Lopez-Cisneros C.R.
**THERMODYNAMICS AND KINETICS OF ADSORPTION OF NITROGEN COMPOUNDS FROM MODEL MIXTURES AND REAL FEEDS: EXPERIMENTS TOWARDS ULSD**
*Instituto Mexicano del Petroleo, Mexico City, Mexico*

**PP-61.** **Lazaridis P.**[1], Karakoulia S.[2], Triantafyllidis K.[1,2]
**A Py-GC/MS STUDY ON THE IN SITU UPGRADING OF BIOMASS PYROLYSIS OIL BY VARIOUS ZEOLITE CATALYSTS**
*[1]Aristotle University of Thessaloniki, Thessaloniki, Greece*
*[2]Chemical Process & Energy Resources Institute, Centre for Research and Technology-Hellas (CPERI/CERTH), Thessaloniki, Greece*

**PP-62.** **Lopatin S.**[1], Chub O.[1], Yazykov N.[1], Pisarev D.[1], Simonov A.[1], Yakovlev V.[1], Zagoruiko A.[1,2]
**STRUCTURED CARTRIDGES WITH REINFORCED FIBER-GLASS CATALYST FOR FUEL COMBUSTION IN THE FLUIDIZED BEDS OF THE INERT HEAT-TRANSFER PARTICLES**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Tomsk Polytechnic University, Tomsk, Russia*

**PP-63.** Luganskiy A., Gorbunov A., Ushin N., **Kozlovskiy R.,** Shvets V., Suchkov Y.
**THERMO-OXIDIZING CRACKING OF HEAVY OIL RESIDUES**
*D. Mendeleyev University of Chemical Technology of Russia, Moscow, Russia*

**PP-64.** **López Pedrajas S.,** Estevez R., Luna D., Bautista F.
**MODIFIED AlPO$_4$ FOR DEHYDRATION OF GLYCEROL IN GAS PHASE**
*University of Cordoba, Cordoba, Spain*

**PP-65.** Makarshin L., **Chumachenko V.,** Ovchinnikova E., Vernikovskaya N., Nesterenko S., Gribovskiy A., Andreev D., Khassin A.A., Parmon V.
**STUDY OF METHANOL TO FORMALDEHYDE OXIDATION IN THE MICROCHANNEL LAB-SCALE REACTOR**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**PP-66.** **Maniecki T.P.,** Mierczynski P., Chalupka K.A., Ciesielski R., Kędziora A.
**NOVEL HETEROGENEOUS CATALYSTS FOR TRANSESTERIFICATION PROCESS OF VEGETABLE OIL**
*Lodz University of Technology, Institute of General and Ecological Chemistry, Lodz, Poland*

**PP-67.** **Marroquin de la Rosa J.O.,** Laredo Sanchez G.C.
**STEADY STATE MULTIPLE REACTION-DIFFUSION PROBLEM REDUCTION BY STOICHIOMETRY RELATIONS**
*Instituto Mexicano del Petroleo, Mexico City, Mexico*

**PP-68.** **Mehr A.S.[1],** Ghavipour M.[2], Behbahani R.M.[2], Yassin M.[3]
**METHANOL-DME to LIGHT OLEFINS OVER SAPO-34: EFFECT OF FEED TYPE ON PRODUCT DISTRIBUTION AND CATALYST PERFORMANCE**
*[1]National Iranian Gas Company-SH. HASHEMINEJAD GAS PROCESSING Co., Mashhad, Iran*
*[2]Department of Gas Engineering, Petroleum University of Technology, Ahwaz, Iran*
*[3]Ahwaz Technology Training Center, National Iranian South Oilfield Company, Khozestan, Iran*

**PP-69.** **Mierczynski P.,** Ciesielski R., Kedziora A., Maniecki T.P.
**THE EFFECT OF GOLD ON THE COPPER CATALYST DURING STEAM-OXYGEN REFORMING OF METHANOL**
*Lodz University of Technology, Institute of General and Ecological Chemistry, Lodz, Poland*

**PP-70.** Moosavi E., **Karimzadeh R.**
**NANOPOROUS FELT-LIKE ACTIVATED CARBON FIBER MODIFIED BY CONCENTRATED $HNO_3$ FOR THE ADSORPTION OF THE DIBENZOTHIOPHENES**
*Tarbiat Modares University, Tehran, Iran*

**PP-71.** **Marinoiu A.,** Raceanu M., Iordache I., Varlam M.
**CARBON MONOXIDE REMOVAL USING HOPCALITE CATALYST AT LOW TEMPERATURE**
*National RD Institute for Cryogenics and Isotopic Technologies- ICIT, Rm Valcea, Romania*

**PP-72.** **Moral A.,** Reyero I., Arzamendi G., Gandía L.
**CATALYTIC PARTIAL OXIDATION OF METHANE OVER COBALT CATALYSTS SUPPORTED ON SYNTHESIZED CERIA**
*Universidad Pública de Navarra, Pamplona, Spain*

**PP-73.** **Mrowiec-Białoń J.[1],** Berdys M.[2], Koreniuk A.[1], Maresz K.[1], Pudło W.[2], Jarzębski A.[1]
**SCALE UP AND PERFORMANCE OF MONOLITHIC CON-FLOW SILICA MICROREACTORS**
*[1]Institute of Chemical Engineering Polish Academy of Sciences, Gliwice, Poland*
*[2]Department of Chemical Engineering and Process Design, Faculty of Chemistry, Silesian University of Technology, Gliwice, Poland*

**PP-74.** Szymańska K.[1], Pietrowska M.[2], Kocurek J.[1], Maresz K.[3], Koreniuk A.[3], **Mrowiec-Białoń J.[1,3],** Magner E.[4], Jarzębski A.[1,3]
**LOW BACKPRESSURE MONOLITHIC ENZYMATIC MICROREACTOR FOR PROTEIN DIGESTION**
*[1]Silesian University of Technology, Gliwice, Poland, Gliwice, Poland*
*[3]Maria Skłodowska-Curie Memorial Cancer Center and Institute of Oncology, Gliwice, Poland*
*[3]Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland*
*[4]University of Limerick, Materials & Surface Science Institute, Limerick, Ireland*

**PP-75.** **Nachenius R.W.,** van de Wardt T., Ronsse F., Prins W.
**VALIDATION OF A TORREFACTION REACTION MODEL FOR A CONTINUOUS SCREW CONVEYOR REACTOR**
*Ghent University, Ghent, Belgium*

**PP-76.** Itkulova S., **Nurmakanov Y.Y.,** Zakumbaeva G., Tashmukhametova Z., Imankulova S.
**STEAM REFORMING OF BIOGAS FOR SYNGAS PRODUCTION**
*D.V. Sokolsky Institute of Organic Catalysis and Electrochemistry, Almaty, Kazakhstan*

**PP-77.** **Odabaşi Ç[1],** Günay E.[2], Yıldırım R.[1]
**SUPPORT VECTOR MACHINE CLASSIFICATION OF WGS REACTION OVER Pt AND Au CATALYSTS FOR KNOWLEDGE EXTRACTION FROM LITERATURE**
*[1]Department of Chemical Engineering Bogazici University, Istanbul, Turkey*
*[2]Istanbul Bilgi University, Istanbul, Turkey*

**PP-78.** **Paiva M.V.,** Contreras J., Zacarias L.
**CRITICAL SUPERFICIAL GAS VELOCITY FOR SUSPENSION OF SOLID PARTICLES IN A SLURRY BUBBLE COLUMN REACTOR FOR HYDROCONVERSION PROCESSES**
*PDVSA INTEVEP, Los Teques, Venezuela*

**PP-79.** Parmon V.N., **Pai Z.P.,** Zhizhina E.G., Adonin N.Yu., Beskopyl'nyi A.M., Makarshin L.
**SMALL SCALE PRODUCTION ORGANIC COMPOUNDS: TECHNOLOGY PECULIARITIES**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**PP-80.** **Pernalete C.G.,** Urbina J.C.
**CAPE OPEN COMPONENT FOR THE SIMULATION OF A DIESEL HYDROTREATING REACTOR**
*PDVSA Intevep, Los Teques, Venezuela*

**PP-81.** **Piatek M.[1],** Iwaniszyn M.[1], Gancarczyk A.[1], Kolaczkowski S.T.[2], Kolodziej A.[1,3]
**FLOW RESISTANCE, TRANSPORT AND MORPHOLOGY OF METALLIC FOAMS APPLIED AS CATALYST CARRIER**
*[1]Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland*
*[2]University of Bath, Bath, UK*
*[3]Opole University of Technology, Opole, Poland*

**PP-82.** **Piskun A.,** Rasrendra C., de Haan J., Heeres H.
**CATALYTIC HYDROGENATION OF LEVULINIC ACID TO γ-VALEROLACTONE IN A CONTINUOUS PACKED-BED REACTOR**
*University of Groningen, Groningen, The Netherlands*

**PP-83.** Piumetti M., Bensaid S., Russo N., **Fino D.**
**$CeO_2$-BASED CATALYSTS WITH ENGINEERED MORPHOLOGIES FOR SOOT OXIDATION**
*Politecnico di Torino – DISAT, Torino, Italy*

**PP-84.** Ponomareva E.A., **Parastaev A.,** Egorova E.
**KINETICS OF ACETALDEHYDE SYNTHESIS FROM ETHANOL OVER A COPPER ON CARBON FIBERS CATALYST**
*Moscow State Academy of Fine Chemical Technology, Moscow, Russia*

**PP-85.** **Poulopoulos S.[1],** Amirov A.[1], Korologos C.[2], Philippopoulos C.[2]
**KINETIC STUDIES OF GASEOUS ETHANOL OXIDATION OVER Pt/Rh AND Pd MONOLITHIC CATALYSTS IN A SPINNING-BASKET FLOW REACTOR**
*[1]Kazakh-British Technical University, Almaty, Kazakhstan*
*[2]National Technical University of Athens, Athens, Greece*

**PP-86.** **Pérez Uriarte P.,** Ateka A., Epelde E., Gamero M., Bilbao J., Aguayo A.
**EFFECT OF TEMPERATURE IN THE PROCESS OF DME CATALYTIC TRANSFORMATION TO PROPYLENE USING A K MODIFIED ZSM-5 ZEOLITE CATALYST**
*University Basque Country, Bilbao, Spain*

**PP-87.** **Rahimi N.[1],** Karimzadeh R.[2]
**CATALYTIC CRACKING OF PROPANE AND BUTANE OVER La-P/HMFI ZEOLITES TO PRODUCE LIGHT OLEFIN**
*[1]National Petrochemical Co. Research & Technology, Tehran, Iran*
*[2]University of Tarbiat Modares, Tehran, Iran*

**PP-88.** **Reshetnikov S.I.,** Zirka A.A., Petrov R.V.
**TETRACHLOROETHYLENE HYDROFLUORINATION TO PENTAFLUOROETHANE: INFLUENCE OF Cr-Mg CATALYST HEAT TREATMENT CONDITIONS, KINETIC STUDY**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**PP-89.** Zhapbasbayev U., **Ramazanova G.**
**MACROSCOPIC MODELING OF TURBULENT FLOW IN A RADIAL FLOW FIXED BED REACTOR**
*Kazakh-British Nechnical University, Almaty, Kazakhstan*

**PP-90.** **Rungrodnimitchai S.**
**MICROWAVE SYNTHESIS OF ION EXCHANGE RESIN FROM USED TIRE**
*Faculty of Engineering, Thammasat University, Bangkok, Thailand*

**PP-91.** **Rynkowski J.M.[1],** Kocemba I.L.[1], Nadajczyk J.[1], Wróbel-Jędrzejewska M.[1], Dobrosz-Gómez I.[2]
**PEROVSKITE-TYPE OXIDES AS CATALYSTS OF THE PROX REACTION**
*[1]Institute of General and Ecological Chemistry, Łódź, Poland*
*[2]Universidad Nacional de Colombia, Manizales, Colombia*

**PP-92.** **San Jose M.,** Alvarez S., Garcia I.
**PERFORMANCE OF CONICAL SPOUTED BED CONTACTOR FOR DRYING OF BIOMASS WASTES**
*University of the Basque Country, Faculty of Science and Technology, Bilbao, Spain*

**PP-93.** **Sardella R.,** Zacarias L., Paiva M.V., Medina H.
**BUBBLE COLUMN REACTOR FLUID DYNAMIC EVALUATION AT PILOT PLANT SCALE FOR RESIDUE AND EXTRA – HEAVY CRUDE OIL UPGRADING TECHNOLOGY**
*PDVSA INTEVEP, Los Teques, Venezuela*

**PP-94.** **Schlereth D.,** Koschany F., Mietaschk K., Hinrichsen O.
**KINETIC AND REACTOR MODELING FOR THE METHANATION OF $CO_2$**
*TU München, Lehrstuhl I für Technische Chemie, Munchen, Germany*

**PP-95.** Semendyaeva N.L.[1], Makeev A.G.[1], **Slinko M.M.[2]**
**THE SYNERGETIC EFFECT AND OSCILLATORY BEHAVIOUR DURING CO OXIDATION OVER A BIMETALLIC COMPOSITE CATALYSTS**
*[1]Lomonosov Moscow State University, Faculty of Computational Mathematics and Cybernetics, Moscow, Russia*
*[2]Semenov Institute of Chemical Physics, Moscow, Russia*

**PP-96.** Ivanchina E., Sharova E., **Yakupova I.**
**OPTIMISATION OF OPERATING CONDITIONS OF CATALYTIC REFORMING CATALYST IN INDUSTRIAL REACTORS BY METHOD OF MATHEMATICAL MODELLING**
*Tomsk Polytechnic University, Tomsk, Russia*

**PP-97.** **Simakova I.[1],** Godina L.[2], Demidova Y.[1], Tokarev A.[2], Murzin D.[2]
**CORRELATION BETWEEN THE XYLITOL AQUEOUS PHASE REFORMING ACTIVITY AND NATURE OF VIII GROUP METAL CATALYSTS**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Åbo Akademi University, Turku, Finland*

**PP-98.** **Simakova I.,** Gulyaeva Y., Panchenko V., Simonov M.
**TRANSFORMATION OF LIGNOCELLULOSE DERIVED C5 ACID INTO GREEN DIESEL FUEL COMPONENTS OVER Pd SUPPORTED ON METAL OXIDES**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**PP-99.** Hawangchu Y.[1], Atong D.[2], **Sricharoenchaikul V.[1],**
**ADVANCED HYDRO REFORMING OF SPENT PULPING CHEMICALS FOR FUEL GENERATION**
*[1]Chulalongkorn University, Bangkok, Thailand*
*[2]National Metal and Materials Technology Center, Pathumthani, Thailand*

**PP-100.** Stefanidis S.[1,2], Karakoulia S.[1], Kalogiannis K.[1], Lappas A.[1], **Triantafyllidis K.[1,3]**
**IN SITU CATALYTIC UPGRADING OF BIOMASS FAST PYROLYSIS VAPORS WITH ACID-BASE MIXED OXIDES DERIVED FROM LAYERED DOUBLE HYDROXIDES (LDHs)**
*[1]Chemical Process & Energy Resources Institute, Centre for Research and Technology-Hellas (CPERI/CERTH), Thessaloniki, Greece*
*[2]University of Western Macedonia, Kozani, Greece*
*[3]Aristotle University of Thessaloniki, Thessaloniki, Greece*

**PP-101.** Strigina V., Doluda V., **Sulman M.,** Sulman E., Skvortsov A., Matveeva V.
**CATALYTIC HYDROGENATION OF FURFURAL**
*Tver Technical University, Tver, Russia*

**PP-102.** **Sulman E.,** Sulman M., Sulman A., Rubin M., Mikhailova A., Doluda V., Lakina N.
**LACTULOSE ISOMERISATION OVER MAGNETIC NANOPARTICLES**
*Tver Technical University, Tver, Russia*

**PP-103.** **Sulman M.,** Manaenkov O., Makeeva O., Sidorov A.
**CATALYTIC HYDROGENOLYSIS OF BIOMASS**
*Tver Technical University, Tver, Russia*

**PP-104.** **Takht Ravanchi M.,** Sahebdelfar S., Rahimi Fard M., Fadaee Rayeni S.
**DEACTIVATION BEHAVIOUR FOR Pd-Ag/α-$Al_2O_3$ CATALYST IN ACETYLENE SELECTIVE HYDROGENATION PROCESS**
*Petrochemical Research and Technology Co., Tehran, Iran*

**PP-105.** **Templis C.,** Vonortas A., Papayannakos N.
**SIMULATION OF AN INDUSTRIAL HYDROTREATER FOR HGO-VEGETABLE OIL CO-HYDROPROCESSING**
*National Technical University of Athens, Zografos-Athens, Greece*

**PP-106.** **Tiamina I.,** Stepacheva A., Nikoshvili L., Strigina V., Matveeva V., Sulman E.
**CATALYTIC SYNTHESIS OF FUEL COMPOUNDS FROM ORGANIC RAW MATERIALS**
*Tver Technical University, Tver, Russia*

**PP-107.** **Trad Z.[1,2,3],** Vial Ch.[1,2,3], Fontaine J-P.[1,2,3], Larroche C.[1,2,3]
**HYDRODYNAMIC MODELING EFFECTS ON MIXING IN SUBMERGED MEMBRANE REACTOR**
*[1]Clermont Université, Université Blaise Pascal, LABEX IMobS[3], Clermont-Ferrand, France*
*[2]Clermont Université, Université Blaise Pascal, Institut Pascal, Clermont-Ferrand, France*
*[3]CNRS, Aubière, France*

**PP-108.** **Triantafyllidis K.[1,2],** Stefanidis S.[2,3], Karakoulia S.[2], Kalogiannis K.[2], Iliopoulou E.[2], Lappas A.[3]
**CATALYTIC UPGRADING OF BIOMASS FAST PYROLYSIS OIL**
*[1]Aristotle University of Thessaloniki, Thessaloniki, Greece*
*[2]Chemical Process & Energy Resources Institute, Centre for Research and Technology-Hellas (CPERI/CERTH), Thessaloniki, Greece*
*[3]University of Western Macedonia, Kozani, Greece*

**PP-109.** **Tungatarova S.A.,** Baizhumanova T.S., Kassymkan K., Serikbaeva G., Komashko L.V., Shlygina I.A.
**SELECTIVE PRODUCTION OF SYNTHESIS GAS IN CATALYTIC MICROREACTOR**
*D.V. Sokolsky Institute of Organic Catalysis and Electrochemistry, Almaty, Kazakhstan*

**PP-110.** **Izquierdo U.[1],** Barrio V.L.[1],Cambra J.F.[1], Kolb G.[2]
**MICRO REACTOR SYSTEMS FOR HYDROGEN PRODUCTION BY ETHYLENE GLYCOL REFORMING**
*[1]School of Engineering (UPV/EHU), c/ Alameda Urquijo s/n, Bilbao, Spain*
*[2]Institut für mikrotechnik Mainz GmbH, Germany, Mainz, Germany*

**PP-111.** Lopatin S.[1], Mikenin P.[1], Pisarev D.[1,3], Baranov D.[1,4], Zazhigalov S.[1], **Zagoruiko A.**[1,2,3]
**PRESSURE DROP AND MASS TRANSFER IN THE STRUCTURED CARTRIDGES WITH FIBER-GLASS CATALYST**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Tomsk Polytechnic University, Tomsk, Russia*
*[3]Novosibirsk State University, Novosibirsk, Russia*
*[4]Novosibirsk State Technical University, Novosibirsk, Russia*

**PP-112.** Yemelyanova V.S., **Dossumova B.T.,** Shakiyev E**.,** Shakiyeva T., Dzhatkanbayeva U.
**FERRUM-MOLYBDENIC CATALYSTS WITH USING OF HUMATE SILICATE IN THE QUALITY OF INERTIAL MATRIX FOR METHANOL OXIDATION INTO FORMALDEHYDE**
*Scientific Research Institute of New Chemical Technologies and Materials, Almaty, Kazakhstan*

**PP-113.** Yemelyanova V.S., **Shakiyeva T.,** Dossumova B.T., Dzhatkanbayeva U., Shakiyev E.
**MESOPHILIC ANAEROBIC FERMENTATION OF BIOMASS IN THE PRESENCE OF IRON COMPLEXES IMMOBILIZED ON HUMIC ACID**
*Scientific Research Institute of New Chemical Technologies and Materials, Almaty, Kazakhstan*

**PP-114.** Yemelyanova V.S., **Shakiyeva T.,** Dossumova B.T., Dzhatkanbayeva U., Shakiyev E.
**MICROSPHERICAL SORBENTS FROM TECHNOLOGICAL RAW OF THERMAL POWER STATION – CATALYSTS OF SULFUR DIOXIDE OXIDATION BY OXYGEN**
*Scientific Research Institute of New Chemical Technologies and Materials, Almaty, Kazakhstan*

**PP-115.** **Zainal Abidin S.[1,2],** Vladisavljevic G.[2], Saha B.[3]
**KINETICS OF FREE FATTY ACID ESTERIFICATION IN USED COOKING OIL USING ION EXCHANGE RESINS AS CATALYST**
*[1]Universiti Malaysia Pahang, Gambang, Malaysia*
*[2]Loughborough University, Loughborough, UK*
*[3]London South Bank University, London, UK*

**PP-116.** Zarvin A.E., **Madirbaev V.Z.,** Korobeishchikov N.G.
**HIGHLY EFFECTIVE ION - CLUSTER MECHANISM OF SELECTIVE EXCITATION OF ARGON LEVELS IN JETS OF MIXTURES**
*Novosibirsk State University, Novosibirsk, Russia*

**PP-117.** **Zazhigalov S.V.[1],** Mikenin P.[1], Lopatin S.[1], Chumakova N.A.[1], Zagoruiko A.N.[1,2]
**MATHEMATICAL MODELLING AND PILOT TESTS OF THE ADSORPTION-CATALYTIC PROCESS FOR ABATEMENT OF ORGANIC POLLUTANTS IN LEAN WASTE GASES**
*[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[2]Tomsk Polytechnic University, Tomsk, Russia*

**PP-118.** **Zhang Y.**
**LIQUID-SOLID REACTION KINETICS OF DIASPORIC BAUXITE DISSOLUTION IN BAYER PROCESS**
*Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China*

**PP-119.** **Zhizhina E.G.,** Odyakov V.F.
**PRODUCTION OF METHYLETHYLKETONE BY OXIDATION OF N-BUTENE. THE KINETICS OF REGENERATION OF THE HOMOGENEOUS CATALYST (Pd + HETEROPOLY ACID) BY OXYGEN, THE KEY STAGE OF THE PROCESS**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

**PP-120.** **van Ommen J.R.,** Goulas A.
**COATING OF PARTICLES IN A FLUIDIZED BED REACTOR USING ATOMIC LAYER DEPOSITION**
*Delft University of Technology, Delft, The Netherlands*

**PP-121.** Kuznetsov V.L., Zakharov V.A., **Chumachenko V.A.,** Moseenkov S.I., Kazakova M.A., Ovchinnikova E.V., Pivovarova I.V.
**A CONCEPT OF POLYMER COMPOSITES FILLED WITH CARBON NANOTUBES PRODUCTION: USAGE OF BIOETHYLENE DERIVATIVES**
*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

## Virtual presentations

**PP-122.** **Bachurikhin A.L.[1],** Efendiev M.[2]
**ELECTROMAGNETIC CATALYTIC REACTOR OF WATER TREATING FROM OILS AND HYDROCARBONS**
*[1]LLC Ecobiocatalis, Moscow, Russia*
*[2]OJSC DagNefteProduct, Makhachkala, Russia*

**PP-123.** Chauhan G., Pant K., **Nigam K.**
**KINETIC STUDIES FOR THE CHELANT ASSISTED EXTRACTION OF HEAVY METALS FROM SPENT CATALYST**
*Indian Institute of Technology Delhi, New Delhi, India*

**PP-124.** **Chistovalov S.M.,** Chistovalova N.M.
**MATHEMATICAL DESCRIPTION OF MOISTURE TRANSFER IN A VIBRATED BOILING LAYER**
*A.N. Nesmeyanov Institute of organoelement compounds RAS, Moscow, Russia*

**PP-125.** **Korobitsyna L.L.,** Vosmerikov A.V., Kozlov V.V., Barbashin Ya.E., Perevezentsev S.A.
**DIRECT METHANE CONVERSION OVER Mo/ZSM-5 CATALYSTS**
*Institute of Petroleum Chemistry SB RAS, Tomsk, Russia*

**PP-126.** **Kosova N.I.[1],** Reshetnikov S.I.[2], Kurzina I.A.[1,3], Vodorezova O.Y.[1], Musich P.G.[1], Kurina L.N.[1]
**STD-PROCESS OVER MIXED CATALYSTS: KINETIC STUDIES AND MATHEMATICAL MODELING**
*[1]Tomsk State University, Tomsk, Russia*
*[2]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
*[3]Tomsk Polytechnic University, Tomsk, Russia*

**PP-127.** **Krivtcova N.I.,** Ivanchina E.D., Tataurschikov A.A.
**MATHEMATICAL MODELLING OF THE CATALYTIC HYDRODESULFURIZATION OF DIESEL FUELS**
*Tomsk Polytechnic University, Tomsk, Russia*

**PP-128.** **Krivtcova N.I.,** Zaitceva E.V.
**OBTAINING ARTIFICIAL LIQUID FUEL BY THERMOLYSIS OF ANIMAL WASTE**
*Tomsk Polytechnic University, Tomsk, Russia*

**PP-129.** **Massalimova B.**
**PARTIAL OXIDATION OF PROPANE-BUTANE MIXTURE TO OXYGENATES OVER Mo - CONTAINING MODIFIED CATALYSTS**
*Arkalyk State Pedagogical Institute after named I. Altynsarin, Arkalyk, Kazakhstan*

**PP-130.** **Pant K.K.**
**GREEN CATALYTIC CONVERSION PROCESSES FOR PRODUCTION OF FUELS FROM RENEWABLE BIOMASS MATERIALS**
*Indian Institute of Technology, Delhi, India*

**PP-131.** **Staroverov D.,** Varlamova E., Makarov M., Shvets V.
**SELECTIVITY OF PALLADIUM-CATALYSED ETHYLENE GLYCOL OXIDATION IN TRICKLE-BED REACTOR**
*D. Mendeleyev University of Chemical Technology of Russia, Moscow, Russia*

**PP-132.** **Todorović Z.B.[1],** Đokić-Stojanović D.R.[2], Troter D.[1], Stamenković O.S.[1], Veljković V.B.[1]
**CaO-CATALYZED ETHANOLYSIS OF SUNFLOWER OIL IN THE PRESENCE OF VARIOUS COSOLVENTS**
*[1]University of Niš, Leskovac, Serbia*
*[2]Zdravlje Actavis, Leskovac, Serbia*

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**SUNFLOWER OIL ETHANOLYSIS CATALYZED BY COMMERCIAL CaO IN THE PRESENCE OF CHOLINE CHLORIDE-UREA-BASED DEEP EUTECTIC SOLVENT**
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*[2]Zdravlje Actavis, Leskovac, Serbia*

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**THE EFFECT OF ZINC CONCENTRATION AND STATE ON ACTIVITY OF CATALYSTS FOR ETHANE AROMATIZATION**
*[1]Institute of Petroleum Chemistry SB RAS, Tomsk, Russia*
*[2]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

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**TEMPERATURE-SCANNING METHOD FOR THE KINETIC STUDIES OF CO OXIDATION OVER CERIA-ZIRCONIA SUPPORTED GOLD CATALYSTS**
[1]Universidad Nacional de Colombia, Manizales, Colombia.
[2]Universidad EAFIT, Medellín, Colombia
[3]Institute of General and Ecological Chemistry, Lodz, Poland