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

European Federation on Chemical Technology

Russian Scientific and Cultural Center in Luxemburg

Federal Agency «Rossotrudnichestvo», Moscow, Russia

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

With the support of the Ministry of Education and Science of the Russian Federation

EFCE Conference
Event 710

XX International conference on Chemical Reactors
CHEMREACTOR-20

Luxemburg, December 3-7, 2012

SCIENTIFIC PROGRAM

Dear participants,

You are welcome to the XX International Conference on Chemical Reactors CHEMREACTOR-20. This year the conference has the Jubilee status, it's history goes to the distant 60's of last century. The event is held every two years in different large scientific and cultural centers worldwide. CHEMREACTOR conference is traditionally devoted to the fundamental aspects and practical application of the catalytic processes and chemical reactors, as well as to the development of the novel modern technologies. The Proceedings of the conference are publishing in the Chemical Engineering Journal, Elsevier.

The good conference tradition is the collaboration with the Russian Centers of Science and Culture in different countries. The XX International Conference on Chemical Reactors CHEMREACTOR-20 is held in Luxemburg, the Russian Center of Science and Culture is one of the conference organizers. Along with the conference scientific program, the Organizing Committee invites the participants to take part in an extensive excursion program around Luxemburg and nearby European countries.

The Scientific trends of the XX International Conference on Chemical Reactors CHEMREACTOR-20 are:

- **Advances in Chemical Reactors Fundamentals:**
  - Chemical Reactions Kinetics
  - Fundamentals of Chemical Reactors Simulation
  - Heat & Mass Transfer in Chemical Reactors
  - Hydrodynamics and CFD Studies in Chemical Reactors
- **Chemical Reaction Engineering and Reactors Design – Novel Approaches, Modeling, Scale-Up, Optimization:**
  - New Designs of Chemical Reactors (Membrane Reactors, Microreactors, Structured Reactors etc)
  - Novel Approaches in Chemical Reaction Processes Engineering (Unsteady-state and Transient Processes, Reverse-flow Operation, Sorption-Enhanced Reaction Processes, Multifunctional Reactors, Reaction-Separation Processes etc)
- **Chemical Reactors and Technologies for Emerging Applications:**
  - Processing of Biomass and Renewable Feedstocks
  - Environmental Protection and Utilization of Wastes
  - Production of Hydrogen and Green Fuels
  - Advanced Processing of Natural Gas and Oil

We wish you a fruitful work at the conference and a pleasant stay in Luxemburg!

Best wishes,
Organizing Committee

Conference Venue

Mondorf Parc Hotel

52 Avenue des Bains / BP
5601 Mondorf-les-Bains, Luxembourg
Tel: (+352) 23 666-666
Web address: http://www.mondorf.lu

INTERNATIONAL SCIENTIFIC COMMITTEE

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Chairman of the Organizing Committee

Professor Alexandr S. Noskov, Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia

SCIENTIFIC PROGRAM
XX International Conference on Chemical Reactors
CHEMREACTOR-20

DECEMBER 3 **MONDAY**

MORNING SESSION

SALLE DES FETES Hall

8.50 OPENING

PLENARY LECTURES

Chairpersons – Professor Alexandr Noskov, Russia
Professor Dmitry Murzin, Finland

9.00
PL-1
Professor Andrzej Stankiewicz
A Professor Mikhail Slin'ko Honorary Lecture:
FROM NANO-PINBALL TO NANO-SNOOKER: TOWARDS PERFECT CHEMICAL REACTORS VIA FUNDAMENTAL CONCEPTS OF PROCESS INTENSIFICATION
Delft University of Technology, The Netherlands

10.00
PL-2
Professor Valentin Parmon
D. Kozlov, V. Parmon
PHOTOCATALYSIS: ENGINEERING ASPECTS OF PHOTOCATALYTIC PROCESSES
Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia

11.00 – 11.30 ***Coffee***

Chairperson – Professor Bordes-Richard, France

11.30 **KEY-NOTE LECTURE**
KN-1
Professor Jacques Fraissard
S. Leclerc[1], M. Petryk[2], D. Canet[1], J. Fraissard
COMPETITIVE DIFFUSION OF GASES IN A MICROPOROUS CATALYST BED USING A SLICE SELECTION PROCEDURE
LPEM - ESPCI and UPMC, France ([1]Univ. H. Poincaré, France; [2]University Ivan Pul'uy, Ukraine)

ORAL PRESENTATIONS

SECTION I

Advances in Chemical Reactors Fundamentals

Chemical Reactions Kinetics
Fundamentals of Chemical Reactors Simulation
Heat & Mass Transfer in Chemical Reactors
Hydrodynamics and CFD Studies in Chemical Reactors

12.00
OP-I-1
Sinev M.Y.
OCM PROCESS AND REACTOR DESIGN: A PHYSICAL CHEMIST LOOK
Semenov Institute of Chemical Physics RAS (Moscow), Russia

12.20
OP-I-2
Bensaid S., Deorsola F., Russo N., Fino D.
MoS_2 NANOPARTICLE PRECIPITATION IN TURBULENT MICROMIXERS
Politecnico di Torino (Torino), Italy

12.40
OP-I-3
Galvita V., Poelman H., Menon U., Marin G.
MICROKINETIC FOR TOLUENE TOTAL OXIDATION OVER $CuO\text{-}CeO_2/Al_2O_3$
Ghent University (Ghent), Belgium

13.00-15.00 ***Lunch***

AFTERNOON SESSION

Chairperson – Professor Valeriy Shvets, Russia

15.00
OP-I-4
Glazneva T.S.[1,2], Galvita V.V.[2], Mezentseva N.V.[1], Sadykov V.A.[1], Marin G.B.[2]
METHANE DRY REFORMING BY TRANSIENT KINETICS STUDY
[1]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia
[2]Ghent University (Ghent), Belgium

15.20
OP-I-5
Iordache I.[1], Varlam M.[1], Culcer M.[1], Raceanu M.[1], Iordache M.[2]
DEVELOPMENT OF THE INTEGRATED MEMBRANE REACTOR FOR HYDROGEN PRODUCTION AND STEADY-STATE ISOTOPE TRANSIENT KINETIC ANALYSIS SYSTEM, TECHNICAL ASPECTS
[1]National Research and Development Institute for Cryogenics and Isotopic Technologies ICIT Rm.Valcea (Rm. Valcea), Romania
[2]National Research & Development Institute for Industrial Ecology – ECOIND (Rm. Valcea), Romania

15.40
OP-I-6
Santos B., Pereira C., Silva V., Loureiro J., Rodrigues A.
SYNTHESIS OF DIMETHYL CARBONATE FROM THE CARBONYLATION OF METHANOL AT HIGH PRESSURE CONDITIONS: KINETIC CONSIDERATIONS
University of Porto (Porto), Portugal

16.00
OP-I-7
Pokrovskaya S.A.[1,2], Chumakova N.A.[1,2], Sazonova N.N.[1], Sadykov V.A.[1,2]
TRANSIENT STUDIES OF REACTION KINETICS OVER THE SOLID CATALYSTS WITH LATTICE OXYGEN MOBILITY
[1]*Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia*
[2]*Novosibirsk State University (Novosibirsk), Russia*

16.20
OP-I-8
Dobrynkin N.M., Smirnov E.I., Romanenko A.V., Chumachenko V.
THE INFLUENCE OF SOLIDS' PROPERTIES ON THE CAKE FORMATION IN FILTRATION OF PLANT OILS SUSPENSION
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

16.40-17.00 ***Coffee***

Chairperson – Professor Vladimir Arutyunov, Russia

17.00
OP-I-9
Reshetnikov S.I.[1], Petrov R.V.[1], Ostrovskii N.[2]
MATHEMATICAL MODELING OF REGENERATION OF COKED Cr-Mg CATALYST FOR FREONS PRODUCTION
[1]*Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia*
[2]*Hipol a.d. (Odzaci), Serbia*

17.20
OP-I-10
Caetano R., Lemos F., Lemos A., Freire F.
MODELING AND CONTROL OF AN EXOTHERMICAL REACTION
Instituto Superior Técnico (Lisboa), Portugal

17.40
OP-I-11
Mishchenko T.I., Snytnikov V.N.
AUTOCATALYTIC GAS - PHASE PROPANE DEHYDROGENATION FOR LIGHT OLEFIN PRODUCTION
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

19.00 ***Welcome Reception***

MORNING SESSION

ROTANGE Hall

ORAL PRESENTATIONS

SECTION II

Chemical Reaction Engineering and Reactors Design – Novel Approaches, Modeling, Scale-Up, Optimization

New Designs of Chemical Reactors (Membrane Reactors, Microreactors, Structured Reactors, etc)
Novel Approaches in Chemical Reaction Processes Engineering (Unsteady-state and Transient Processes, Reverse-flow Operation, Sorption-Enhanced Reaction Processes, Multifunctional Reactors, Reaction-Separation Processes, etc)

Chairperson – Dr. Victor Chumachenko, Russia

12.00
OP-II-1
Gosiewski K., Pawlaczyk A.
CATALYTIC OR THERMAL REVERSED FLOW COMBUSTION OF COAL MINE VENTILATION AIR METHANE: WHAT IS BETTER CHOICE AND WHEN?
Institute of Chemical Engineering, Polish Academy of Sciences (Gliwice), Poland

12.20
OP-II-2
Zagoruiko A., Vanag S.
REVERSE-FLOW REACTOR CONCEPT FOR COMBINED SO_2 AND CO OXIDATION IN SMELTER OFF-GASES
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

12.40
OP-II-3
Pirard S.[1], Bossuot C.[2], Pirard J.[1]
MODELLING OF A CONTINUOUS ROTARY REACTOR FOR CARBON NANOTUBE SYNTHESIS BY CATALYTIC CHEMICAL VAPOUR DEPOSITION
[1]*Université de Liège (Liège), Belgium*
[2]*Nanocyl SA (Sambreville), Belgium*

13.00-15.00 ***Lunch***

AFTERNOON SESSION

Chairperson – Professor Krzysztof Gosiewski, Poland

15.00
OP-II-4
Alekseenko S.V.[1,2], Dulin V.M.[1], Markovich D.M.[1,2]
DIAGNOSTICS AND CONTROL OF COHERENT FLOW STRUCTURES IN A PREMIXED COMBUSTOR
[1]*S.S. Kutateladze Institute of Thermophysics, SB RAS (Novosibirsk), Russia*
[2]*Novosibirsk State University (Novosibirsk), Russia*

15.20
OP-II-5
Dominguez-Ramos A., Garea A., Irabien A.
PHOTOVOLTAIC SOLAR ELECTRO-OXIDATION REACTOR (PSEOR): ENERGY BALANCE
University of Cantabria, Department of Chemical Engineering (Santander), Spain

15.40
OP-II-6
Vernikovskaya N.V.[1,2,3], Pinaeva L.G.[1], Isupova L.A. [1], Noskov A.S.[1,3]
OXIDATION OF AMMONIA TO NOx IN A TWO-BED (Pt GAUZES + OXIDE MONOLYTIC LAYER) REACTOR: EXPERIMENTAL STUDIES AND MATHEMATICAL MODELLING
[1]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia
[2]Novosibirsk State University (Novosibirsk), Russia
[3]Novosibirsk State Technical University

16.00
OP-II-7
Zazhigalov S., Chumakova N., Zagoruiko A.
MATHEMATICAL MODELING OF THE MULTIDISPERSED ADSORPTION-CATALYTIC SYSTEM FOR REMOVING ORGANIC IMPURITIES FROM WASTE GASES
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

16.20
OP-II-8
Ermolaev V.S.[1,2], Ermolaev I.S.[1,2], Mitberg E.B.[1,2], Mordkovich V.Z.[1,2]
SCALING UP HIGHLY PRODUCTIVE FISCHER-TROPSCH REACTOR FROM LABORATORY TO PILOT SIZE
[1]Technological Institute for Superhard and Novel Carbon Materials, Troitsk, Russia
[2]Infra Technology Ltd.(Moscow),Russia

16.40 -17.00 ***Coffee***

Chairperson – Dr. Andrey Zagoruiko, Russia

17.00
OP-II-9
Kozlovskiy R., Shvets V.F., Kozlovskiy I.A., Makarov M.G., Suchkov Y.P.
ONE-STAGE TECHNOLOGY FOR PRODUCTION OF CONCENTRATED ETHYLENE GLICOL-WATER SOLUTIONS (AUTOMOTIVE ANTIFREEZE)
D. Mendeleyev University of Chemical Technology of Russia (Moscow), Russia

17.20
OP-II-10
Kostenko S.S., Ivanova A.N., Karnaukh A.A., Polianczyk E.V.,
SIMULATION OF THE METHANE CONVERSION BY PARTIAL OXIDATION IN A POROUS MEDIUM REACTOR
Institute of Problems of Chemical Physics RAS (Chernogolovka, Moscow region), Russia

17.40
OP-II-11
Ismagilov I.Z.[1], Rebrov E.V.[2], de Croon M.H.[2], Matus E.V.[1], Panin A.V.[3], Okhlopkova L.B.[1], Kerzhentsev M.A.[1], Schouten J.C.[2], Ismagilov Z.R.[1,4]
DEVELOPMENT OF ALUMINUM ANODIC OXIDATION PROCESS FOR FUNCTIONAL COATINGS DEPOSITION
[1]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia
[2]Eindhoven University of Technology (Eindhoven), The Netherlands
[3]Institute of Strength Physics and Materials Science SB RAS (Tomsk), Russia
[4]Insitute of Coal-Chemistry and Material Science SB RAS (Kemerovo), Russia

19.00 ***Welcome Reception***

MORNING SESSION

SALLE DES FETES Hall

PLENARY LECTURES

Chairperson – Professor Robert Farrauto, USA

9.00
PL-3
Professor Gilbert Froment
ADVANCED KINETIC MODELING OF HYDROCARBON CONVERSION PROCESSES
Texas A&M University, USA

10.00
PL-4
Professor Jean-Pierre Gilson
ENGINEERING & CATALYSIS CHALLENGES IN PETROLEUM REFINING
Laboratoire Catalyse & Spectrochimie, University of Caen, ENSICAEN, CNRS, Caen, France

11.00 – 11.30 *Coffee*

Chairperson – Professor Mikhail Sinev, Russia

11.30 **KEY-NOTE LECTURE**
KN-2
Dr. Vadim Strots
Vadim Strots, Friedemann Schrade, Stephan Adelberg
INTEGRATED APPROACH TO REDUCTION OF MOBILE DIESEL EMISSIONS
IAV GmbH, Berlin, Germany

ORAL PRESENTATIONS

SECTION I

Advances in Chemical Reactors Fundamentals

12.00
OP-I-12
Hernandez S.[1], Bensaid S.[2], Armandi M.[1], Sacco A.[1], Bonelli B.[2], Garrone E.[2]
A BUBBLING REACTOR TO STUDY WATER SPLITTING UNDER PHOTOCATALYTIC SYSTEMS AND ITS MODELING TO INVESTIGATE THE REACTION KINETICS
[1]Center for Human Space Robotics, Istituto Italiano di Tecnologia Robotics (Turin), Italy
[2]Politecnico di Torino (Torino), Italy

12.20
OP-I-13
Ovchinnikova E., Chumachenko V.
FIXED BED REACTOR FOR THE FORMALDEHYDE PRODUCTION: THE EFFECT OF NON-UNIFORM RADIAL HEAT TRANSFER
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

12.40
OP-I-14
Zhapbasbayev U.K., Ramazanova G.
COMPUTATIONAL ISSUES CONCERNING HYDRODYNAMICS OF REFORMING REACTORS
Kazakh-British Technical University (Almaty), Kazakhstan

13.00-15.00 ***Lunch***

AFTERNOON SESSION

Chairperson – Professor Ioan Iordache, Romania

15.00
OP-I-15
Roger F., Gourara A., Most J.M., Wang H.
NUMERICAL INVESTIGATION ON THE CHEMICAL GAS MIXING THROUGH INTERACTION BETWEEN JETS AND A CROSSFLOW
Institute PPRIME, University of Poitiers (Poitiers), France

15.20
OP-I-16
Hartmann V.L.
DRAG FACTOR FOR A FIXED BED AS A FUNCTION OF THE Re NUMBER WITH COMMON EXPONENT
LLC "NIAP-KATALIZATOR" (Novomoskovsk), Russia

15.40
OP-I-17
Nawaz Z.[1,2], Baksh F.[1], Al-Qahtani A.[1], Wei F.[2]
INTEGRATED BI-MODAL FLUIDIZED BED REACTOR FOR BUTANE DEHYDROGENATION TO CORRESPONDING BUTENES
[1]SABIC Technology & Innovation Center (Riyadh), Saudi Arabia
[2]Tsinghua University (Beijing), China

16.00
OP-I-18
Klenov O.P., Pokrovskaya S.A., Chumakova N.A., Noskov A.S.
HONEYCOMB CATALYSTS WITH POROUS WALLS: CFD MODELING OF OXIDATION REACTION IN CHANNELS OF DIFFERENT SHAPES
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

16.20 – 16.40 ***Coffee***

17.00 *Evening tour around Luxemburg*

MORNING SESSION

ROTANGE Hall

ORAL PRESENTATIONS

SECTION II

Chemical Reaction Engineering and Reactors Design – Novel Approaches, Modeling, Scale-Up, Optimization

Chairperson – Dr. Aurora Garea, Spain

12.00
OP-II-12
Urzhuntsev G.A., Ovchinnikova E.V., Chumachenko V.
ISOMERIZATION OF n- BUTANE OVER Pd-SO_4/ZrO_2 CATALYST: PROSPECTS FOR COMMERCIAL APPLICATION
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

12.20
OP-II-13
Bordes-Richard E.[1], Shekari A.[2], Patience G.S.[2]
OXIDATION OF *n*-BUTANE VPO CATALYSTS IN VARIOUS REACTORS: EFFECTS OF TRANSIENT REDOX CONDITIONS ON THE PRODUCTION OF MALEIC ANHYDRIDE
[1]*Unité de Catalyse et de Chimie du Solide, UMR CNRS 8181, Ecole Nationale Supérieure de Chimie de Lille – Université des Sciences et Technologies de Lille (Lille), France*
[2]*Department of Chemical Engineering, Ecole Polytechnique de Montréal (Montréal), Canada*

12.40
OP-II-14
Snytnikov V.N., Mishchenko T.I., Snytnikov Vl.N., Stoyanovskaya O.P., Stadnichenko O.A.
ETHANE DEHYDROGENATION IN EXPERIMENTAL SETUP WITH ADDITIONAL RADICALS GENERATION
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia
INCAT LTD (Novosibirsk), Russia

13.00-15.00 ***Lunch***

AFTERNOON SESSION

Chairperson –Professor Sergey Alekseenko, Russia

15.00
OP-II-15
Zolotarskii I.[1], Andrushkevich T.[1], Stompel S.[2], Efimov V.[2], Nakrokhin V.[1], Popova G.[1], Zudilina L.[1], Vernikovskaya N.[1]
DESIGN AND OPERATION OF PILOT PLANT FOR TWO-STAGE OXIDATION OF METHANOL INTO FORMIC ACID
[1]*Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia*
[2]*Safe Technologies Inc. (St. Petersburg), Russia-USA*

15.20
OP-II-16
Bokarev D.A.[1], Egorova E.V.[1], Ponomareva E.A.[1], Dol A.V.[2], Ivanov A.V.[2]
MICROREACTOR DESIGN FOR THE PROCESS OF ETHANOL DEHYDROGENATION
[1]Lomonosov Moscow University of Fine Chemical Technology (Moscow), Russia
[2]Chernyshevsky Saratov State University (Saratov), Russia

15.40
OP-II-17
Romanovskiy R.V., Ivanchina E.D., Ivashkina E.N., Kravtsov A.V.†
RAISING THE EFFICIENCY OF CATALYSTS FOR C_9-C_{14} ALKANES DEHYDROGENATION
Tomsk Polytechnic University (Tomsk), Russia

16.00
OP-II-18
Gorgots A. HUBER PRESENTATION
HUBER TEMPERATURE CONTROL SYSTEMS FOR THE CHEMICAL REACTORS
Peter Huber, Kältemaschinenbau GmbH (Offenburg), Germany

16.20 – 16.40 ***Coffee***

17.00 *Evening tour around Luxemburg.*

MORNING SESSION

SALLE DES FETES Hall

PLENARY LECTURES

Chairperson –Professor Andrzej Stankiewicz, The Netherlands

9.00
PL-5
Professor Timothy F.L. McKenna
OLEFIN POLYMERISATION REACTORS: WHAT KIND OF PROBLEMS DO WE FACE IN OLEFIN POLYMERISATION REACTORS, AND WHAT KIND OF LAB TOOLS CAN WE USE TO STUDY THEM?
Université de Lyon, Villeurbanne, France

10.00
PL-6
Professor Sergei D. Varfolomeev
MODERN BIOFUELS: COMBINATION OF CHEMISTRY AND BIOTECHNOLOGY
Emanuel Institute of Biochemical Physics RAS, Moscow, Russia

11.00 – 11.30 ***Coffee***

Chairperson –Professor Erik Heeres, The Netherlands

11.30 **KEY-NOTE LECTURE**
KN-3
Professor Dmitry Murzin
Dmitry Yu. Murzin, Tapio Salmi
DESIGN OF PROCESSES FOR VALUABLE CHEMICALS PRODUCTION FROM BIOMASS
Åbo Akademi University, Turku, Finland

ORAL PRESENTATIONS

SECTION I

Advances in Chemical Reactors Fundamentals

12.00
OP-I-19
Arve K.[1], Mäki-Arvela P.[1], Eränen K.[1], Salmi T.[1], Tiitta M.[2], Murzin D.Yu.[1]
A MULTITUBULAR REACTOR SYSTEM FOR PARALLEL SCREENING OF CATALYSTS FOR RING OPENING OF DECALIN IN CONTINUOUS MODE
[1]*Åbo Akademi University, Laboratory of Industrial Chemistry and reaction Engineering (Turku), Finland*
[2]*Neste Oil (Porvoo), Finland*

12.20
OP-I-20
Schietekat C.M.[1], Van Goethem M.M.[2], Van Geem K.M.[1], Marin G.B.[1]
3D SWIRL FLOW REACTOR TECHNOLOGY FOR PYROLYSIS PROCESSES: HYDRODYNAMIC AND COMPUTATIONAL FLUID DYNAMIC STUDY
[1]*Ghent University (Ghent), Belgium*
[2]*Technip (Zoetermeer), The Netherlands*

12.40
OP-I-21
Arutyunov V.S.[1], Magomedov R.N.[1], Proshina A.Y.[1], Strekova L.N.[1], Fokin I.G.[2], Rudakov V.M.[2], Savchenko V.I.[2]
OXIDATIVE CONVERSION OF LIGHT ALKANES
[1]*Semenov Institute of Chemical Physics RAS (Moscow), Russia*
[2]*Institute of Problems of Chemical Physics RAS (Chernogolovka), Russia*

13.00-15.00 ***Lunch***

AFTERNOON SESSION

SECTION III

Chemical Reactors and Technologies for Emerging Applications
Processing of Biomass and Renewable Feedstocks
Environmental Protection and Utilization of Wastes
Production of Hydrogen and Green Fuels
Advanced Processing of Natural Gas and Oil

Section III-A

Processing of Biomass and Renewable Feedstocks

Chairperson –Professor Sergey Varfolomeev, Russia

15.00
OP-III-A-1
Yildiz G.[1], Au-Yeung K.[2], Ronsse F.[1], van Duren R.[2], Prins W.[1]
CATALYTIC FAST PYROLYSIS OF BIOMASS
[1]*Ghent University (Ghent), Belgium*
[2]*Albemarle Catalysts Company BV (Amsterdam), The Netherlands*

15.20
OP-III-A-2
Yakovlev V.A.[1], Bykova M.V.[1], Ivanova A.S.[1], Selischeva S.A.[1], Smirnov A.A.[1], Khromova S.[1], Ardiyanti A.[2], Venderbosch R.[3], Heeres H.J.[2], Parmon V.[1]
DESIGN OF CATALYTIC PROCESSES FOR BIOFUELS PRODUCTION FROM BIO-OIL AND PLANT OILS
[1]*Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia*
[2]*University of Groningen, Department of Chemical Engineering (Groningen), The Netherlands*
[3]*Biomass Technology Group B.V. (Enschede), The Netherlands*

15.40
OP-III-A-3
Ardiyanti A.[1], Khromova S.[2], Yakovlev V.A.[2], Venderbosch R.[3], Heeres H.J.[1]
NEW INSIGHTS IN CATALYTIC HYDROTREATMENT OF FAST PYROLYSIS OIL USING HETEROGENEOUS CATALYSTS
[1]University of Groningen, Department of Chemical Engineering (Groningen), The Netherlands
[2]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia
[3]Biomass Technology Group B.V. (Enschede), The Netherlands

16.00
OP-III-A-4
Valerie E.[1], Ikenna A.[1], Mäki-Arvela P.[2], Mikkola J.[1]
SELECTIVE FRACTIONATION OF LIGNOCELLULOSIC MATERIALS USING SWITCHABLE IONIC LIQUIDS
[1]Åbo Akademi University (Turku), Finland
[2]Chemical-Biological Center, Umeå University (Umeå), Finland

16.20
OP-III-A-5
Zaytseva Y.[1], Oliver-Tomas B.[2], Simonov M.[1], Renz M.[2], Shutilov A.[1], Zenkovets G.[1], Boronat M.[2], Simakova I.[1], Parmon V.[1], Corma A.[2]
GREEN DIESEL FROM VALERIC ACIDS: EVALUATION OF Pd SUPPORTED ON ZrO_2 and CeO_2 MODIFIED CATALYSTS IN CONSECUTIVE KETONIZATION AND HYDROGENATION
[1]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia
[2]Institute of Chemical Technology (UPV-CSIC) (Valencia), Spain

16.40
OP-III-A-6
Aracil J., Bouaid A., El Boulifi N., Hahati K., Martinez M.
BIODIESEL PRODUCTION FROM RAPESEED AND USED FRYING OILS AND BIOBUTANOL. IMPROVEMENT OF COLD FLOW PROPERTIES
Complutense University of Madrid (Madrid), Spain

17.00 ***Poster Session***

Coffee

MORNING SESSION

ROTANGE Hall

Section III-A

Processing of Biomass and Renewable Feedstocks

Chairperson –Dr. Vadim Yakovlev, Russia

12.00

OP-III-A-7

Demidova Y.S.[1], Simakova I.L.[1], Estrada M.[2], Suslov E.V.[3], Volcho K.P.[3], Salakhutdinov N.F.[3], Simakov A.V.[4], Murzin D.[5]

ONE-POT AMINATION OF TERPENE ALCOHOLS OVER METAL OXIDES SUPPORTED Au CONTAINING CATALYSTS

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

[2]Posgrado en Física de Materiales, Centro de Investigación Científico y de Educación Superior de Ensenada (Ensenada), Mexico

[3]Novosibirsk Institute of Organic Chemistry SB RAS (Novosibirsk), Russia

[4]Centro de Nanociencias y Nanotecnologia, (Ensenada), Mexico

[5]Åbo Akademi University, Process Chemistry Centre (Turku), Finland

SECTION III

Chemical Reactors and Technologies for Emerging Applications

Section III-B

Feedstock Processing for Energetics

12.20

OP-III-B-1

Urko Izquierdo I.E., Barrio V.L., Lago N., Requies J., Cambra J.F., Güemez M.B., Arias P.L.

FROM BIOGAS TO HYDROGEN: REFORMING PROCESSES DEVELOPMENT USING ADVANCED REACTION SYSTEMS

University of the Basque Country (Bilbao), Spain

12.40

OP-III-B-2

Dubinin Y.[1], Yakovlev V.[1], Parmon V.[1], Yazykov N.[1], Simonov A.[1], Fedorov I.[2]

HEAT SUPPLY UNITS WITH CATALYTIC COMBUSTION OF SOLID FUELS IN FLUIDIZED BED

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

[2]Joint stock company "Thermosoft-Siberia" (Novosibirsk), Russia

13.00-15.00 ***Lunch***

Afternoon Session

Section III-C

Environmental Protection and Chemical Processes

Chairperson –Dr. Pavel Snytnikov, Russia

15.00
OP-III-C-1
Rahimi N.[1], Karimzadeh R.[2]
APPLICATION OF MATHEMATICAL METHODS FOR DERIVING THE RATE OF REACTION IN COMPLICATED REACTION MECHANISMS
[1]National Petrochemical Company. Research & Technology-Tarbiat Modares University (Tehran), Iran
[2]Tarbiat Modares University (Tehran), Iran

15.20
OP-III-C-2
Itkulova S.S., Zakumbaeva G.D., Nurgaliyeva I.A., Ermagambetova A., Nurmakanov E., Mukazhanova A.
CATALYTIC CONVERSION OF BIOGAS FOR PRODUCING VALUABLE PRODUCTS
D.V. Sokolsky Institute of Organic Catalysis and Electrochemistry (Almaty), Kazakhstan

15.40
OP-III-C-3
Liu Y., Harold M., Luss D.
CATALYST DESIGN FOR REDUCTION OF NOx EMISSIONS
University of Houston (Houston), USA

16.00
OP-III-C-4
Hussain M.[1,2], Fino D.[1], Russo N.[1]
MODIFIED KIT-6 AND SBA-15-SPHERICAL SUPPORTED Rh AND Ru CATALYSTS FOR N_2O ABATEMENT
[1]Politecnico di Torino (Torino), Italy
[2]COMSATS Institute of Information Technology (Lahore), Pakistan

16.20
OP-III-C-5
Sulman E., Chalov K., Lugovoy Y., Kosivtsov Y.
THE CATALYTIC INFLUENCE OF METAL CHLORIDES ON THE PROCESS OF OIL WASTE PYROLYSIS
Tver Technical University (Tver), Russia

16.40
OP-III-C-6
Manoj Kumar Reddy P., Linga Reddy E., Subrahmanyam Ch.
NONTHERMAL PLASMA REACTOR FOR WASTE WATER TREATMENT
Indian Institute of Technology Hyderabad (Hyderabad), India

17.00 ***Poster Session***

Coffee

19.30 **Banquet**

MORNING SESSION

SALLE DES FETES Hall

PLENARY LECTURE

Chairperson –Professor Gilbert Froment, USA

9.00
PL-7
Professor Robert Farrauto
NEW CATALYSTS AND REACTOR DESIGNS FOR THE HYDROGEN ECONOMY
BASF Corporation, Iselin; Columbia University, the City of New-York, USA

10.00 – 10.30 ***Coffee***

SECTION III

Chemical Reactors and Technologies for Emerging Applications

Section III-B

Feedstock Processing for Energetics

Chairperson –Professor Dan Luss, USA

10.30
OP-III-B-3
Zyryanova M.[1,2,3], Snytnikov P.[1,2,3], Amosov Y.[1,2,3], Shigarov A.[1,2,3], Belyaev V.[1,2,3], Kireenkov V.[1,2,3], Kuzin N.[1,2,3], Kirillov V.[1,2,3], Sobyanin V.[1,2]
CATALYTICALLY CONVERTED ASSOCIATED PETROLEUM GAS – A SUITABLE RESOURCE FOR POWER GENERATION UNIT FEEDING APPLICATION
[1]*Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia*
[2]*Novosibirsk State University (Novosibirsk), Russia*
[3]*"UNICAT" Ltd (Novosibirsk), Russia*

10.50
OP-III-B-4
Snytnikov P.[1,2,3], Zyryanova M.[1,2,3], Shigarov A.[1,2,3], Amosov Y.[1,2,3], Belyaev V.[1,2,3], Kireenkov V.[1,2,3], Kuzin N.[1,2,3], Kirillov V.[1,2,3], Sobyanin V.[1,2]
CONVERTION OF ASSOCIATED PETROLEUM GAS INTO METHANE- SYNGAS MIXTURES. REACTION MODELING AND REACTOR DESIGN
[1]*Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia*
[2]*Novosibirsk State University (Novosibirsk), Russia*
[3]*"UNICAT" Ltd (Novosibirsk), Russia*

11.10
OP-III-B-5
Tippawan P., Arpornwichanop A.
ENERGY AND EXERGY ANALYSES OF HYDROGEN PRODUCTION FROM DIFFERENT ETHANOL REFORMING PROCESSES
Chulalongkorn University (Bangkok), Thailand

11.30
OP-III-B-6
Yeletsky P.[1], Larichev Yu.[1], Iost K.[2], Lebedeva M.[1], Yakovlev V.A.[1], Parmon V.[1], Yazykov N.[1]
DEVELOPMENT OF PROCESS OF HIGH-ASH BIOMASS CONVERSION INTO CARBONACEOUS CATALYST SUPPORTS, ADSORBENTS AND MATERIALS FOR SUPERCAPACITORS
[1]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia
[2]Institute of Hydrocarbon Processing SB RAS (Omsk), Russia

11.50 **Conference closing**

12.30 **Lunch**

14.00 **Excursion to Metz**

POSTER PRESENTATIONS

SECTION I.

Advances in Chemical Reactors Fundamentals

PP-I-1. **Avetisov A.K., Sokolov A.M., Zyskin A.G.**
ANALYSIS OF POSSIBILITIES FOR THE INTENSIFICATION OF AMMONIA PRODUCTION
Karpov Institute of Physical Chemistry (Moscow), Russia

PP-I-2. **Davletbaeva I.M.[1], Gumerov A.M.[1], Davletbaev R.S.[2]**
MATHEMATICAL MODELING OF PROCESS OF STRUCTURIZATION POLYURETHANES BY COORDINATION COMPOUNDS
[1]*Kazan National Research Technological University (Kazan), Russia*
[2]*Kazan National Research Technical University (Kazan), Russia*

PP-I-3. **Deyun E.[1], Kustova L.[1], Finaeva J.[1], Samoylenko N.[1], Korsunskiy B.L.[1,2]**
THERMAL MODES OF THE COUNTERFLOW REACTOR OF REPLACEMENT
[1]*Institute of Problems of Chemical Physics RAS (Chernogolovka), Russia*
[2]*Semenov Institute of Chemical Physics RAS (Moscow), Russia*

PP-I-4. **Ezdin B.S., Nikiforov A.A., Zarvin A.E., Kaljada V.V., Mishchenko I.V.**
USE OF THE COMPRESSION REACTOR TO PROCESS THE ASSOCIATED GAS
Novosibirsk State University (Novosibirsk), Russia

PP-I-5. **Gumerov A.M., Davletbaeva I.M.**
MODELING OF BUTADIENE POLYMERIZATION USING NEODYMIUM CATALYST COMPLEX
Kazan National Research Technological University (Kazan), Russia

PP-I-6. **Klenov O.P., Noskov A.S.**
MULTIPHASE FLOW AND DISPERSION OF H_2 IN THE SLURRY REACTOR
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

PP-I-7. **Zarvin A.E., Korobeishchikov N.G., Kalyada V.V., Khodakov M.D., Madirbaev V.Zh.**
ON THE POSSIBILITY OF PLASMA-CHEMICAL SYNTHESIS OF HEAVY HYDROCARBONS IN A FLOW WITH CLUSTERS
Novosibirsk State University (Novosibirsk), Russia

PP-I-8. **Lomonosov V.[1], Gordienko Y.[1], Sinev M.Y.[2], Ermolaev V.S.[3]**
COMPREHENSIVE CFD MODEL OF REACTOR FOR OXIDATIVE COUPLING OF METHANE
[1]*ZAO "SCHAG" Company (Moscow), Russia*
[2]*Semenov Institute of Chemical Physics RAS (Moscow), Russia*
[3]*FSBI TISNCM (Moscow), Russia*

PP-I-9. **Zhizhina E.G., Odyakov V.F.**
KINETICS OF OXIDATION OF BUTENE-1 TO METHYLETHYLKETONE IN THE PRESENCE OF A HOMOGENEOUS CATALYST (COMPLEX OF PALLADIUM + Mo-V-P HETEROPOLY ACID)
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

PP-I-10. **Rahimi N.[1], Karimzadeh R.[2]**
THE PROS AND CONS OF DMDS REPLACEMENT WITH H_2S IN AN OLEFIN PLANT
[1]*National Petrochemical Company. Research & Technology-Tarbiat Modares University (Tehran), Iran*
[2]*Tarbiat Modares University (Tehran), Iran*

PP-I-11. **Sapunov V.N.[1], Petukhov A.A.[2]**
KINETICS OF 2-METHYLBUTENE-2 EPOXIDATION WITH 2-METHYLBUTANE HYDROPEROXIDE
[1]*D. Mendeleyev University of Chemical Technology of Russia (Moscow), Russia*
[2]*KTChU (Kazan), Russia*

PP-I-12. **Sezgi N.A., Aydemir B.**
PYROLYSIS OF POLYETHYLENE OVER ALUMINA INCORPORATED MCM-41 CATALYST
Middle East Technical University (Ankara), Turkey

PP-I-13. **Simonov M.M., Simakova I.**
KINETIC EVIDENCE FOR EQUILIBRIUM BETWEEN PROPYLENE GLYCOL AND HYDROXYACETONE DURING BUTYL LACTATE HYDROGENOLYSIS
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

PP-I-14. **Sulman E.[1], Grigorjev M.[1], Sapunov V.[2], Matveeva V.[1], Stein B.[3], Bronstein L.[4], Zaporozhets M.[5], Avilov A.[5]**
KINETICS OF D-GLUCOSE HYDROGENATION OVER POLYMER-BASED RUTHENIUM CATALYSTS
[1]Tver Technical University (Tver), Russia
[2]D. Mendeleyev University of Chemical Technology of Russia (Moscow), Russia
[3]Indiana University, Department of Biology (Bloomington), USA
[4]Indiana University, Department of Chemistry (Bloomington), USA
[5]Shubnikov Institute of Crystallography of the Russian Academy of Sciences (Moscow), Russia

PP-I-15. **Uriz I.[1], Arzamendi G.[1], Echave J.[2], Sanz O.[2], Montes M.[2], Gandía L.M.[1]**
CFD ANALYSIS OF HEAT LOSSES FROM A MICROREACTOR FOR THE STEAM REFORMING OF METHANOL
[1]Departamento de Química Aplicada, Universidad Pública de Navarra (Pamplona), Spain
[2]Departamento de Química Aplicada, Universidad del País Vasco (San Sebastian-Donostia), Spain

PP-I-16. **Lopatin S., Zagoruiko A.**
PRESSURE DROP OF STRUCTURED CARTRIDGES WITH FIBER-GLASS CATALYSTS
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

SECTION II.

Chemical Reaction Engineering and Reactors Design – Novel Approaches, Modeling, Scale-Up, Optimization

PP-II-1. **Alvarez-Guerra M., Garea A., Irabien A.**
VALORISATION OF CO_2 IN A FILTER-PRESS ELECTROCHEMICAL REACTOR: MODELLING THE INFLUENCE OF FLOW CONDITIONS ON FORMATE FORMATION
University of Cantabria, Department of Chemical Engineering (Santander), Spain

PP-II-2. **Baskakov V.S.[1], Serbinenko V.[2], Mishchenko P.[3], Lopatin S.[4], Zagoruiko A.[4]**
REACTOR FOR PURIFICATION AND COOLING THE EXHAUST GASES FROM THE STATIONARY DIESEL ENGINES
[1]M Automatica Co. (Moscow), Russia
[2]SibTransService Co. (Novosibirsk), Russia
[3]Kutateladze Institute of Thermophysics of SB RAS (Novosibirsk), Russia
[4]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

PP-II-3. **Chistovalov S.M., Pavlukovich N.G.**
MULTIFUNCTIONAL CHEMICAL REACTOR FOR SMALL-SCALE PRODUCTION
A.N. Nesmeyanov Institute of Organoelement Compounds RAS (Moscow), Russia

PP-II-4. **Denisov S.P.[1], Koshchenko V.[2], Smirnov M.[3], Bukhtiyarov V.[3]**
A UNIVERSAL CLOSE COUPLED CATALYST WITH IMPROVED GAS DISTRIBUTION
[1]Ecoalliance, Ltd (Novouralsk), Russia
[2]OOO "Oasis" (Novouralsk), Russia
[3]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

PP-II-5. **Frantsina E.V., Ivanchina E.D., Kravtsov A.V.[†], Romanovskii R.V., Afanasijeva Y.I.**
EFFICIENCY INCREASING OF DEHYDROGENATION REACTOR BY WATER INJECTION OPTIMIZATION
Tomsk Polytechnic University (Tomsk), Russia

PP-II-6. **Gyngazova M.S., Ivanchina E.D., Kravtsov A.V.[†], Chekantsev N., Sharova E.S.**
USE OF MATHEMATICAL MODELING METHOD FOR REACTORS CONSTRUCTION OPTIMIZATION FOR NAPHTHA CATALYTIC REFORMING AND ISOMERIZATION PROCESSES
Tomsk Polytechnic University (Tomsk), Russia

PP-II-7. **Isa Y.M.Makarfi, Mero-Lee Cornelius, Ebraheem Mohiuddin, Masika Mdleleni**
EFFECT OF CATALYST MORPHOLOGY AND ACTIVITY IN THE PRODUCTION OF FUELS RANGE HYDROCARBONS
PetroSA Fuel Innovation Center, SAIAMC, University of the Western Cape (Cape Town), South Africa

PP-II-8. **Jonmurodov A.S.[1], Teshaev K.I.[2], Muhidinov Z.K.[1], Liu L.[3]**
PURIFICATION AND CONCENTRATION OF PECTIN POLYSACCHARIDE HYDROLYSATE BY DIAULTRAFILTRATION. A PILOT PLAN SCALE
[1]Nikitin Institute of Chemistry of Tajikistan Academy of Sciences (Dushanbe), Tajikistan
[2]Technological University of Tajikistan (Dushanbe), Tajikistan
[3]Eastern Regional Research Center ARS USDA (Wyndmoor, Pennsylvania), USA

PP-II-9. **Kagyrmanova A., Vernikovskaya N., Danilevich V.V., Glazyrin A.V., Isupova L.A., Noskov A.S.**
ADSORPTION OF WATER VAPOUR ON ACTIVATED ALUMINA: EXPERIMENTS AND MATHEMATICAL MODELING
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

PP-II-10. **Kalle Arve, Victor Sifontes, Kari Eränen, Dmitry Yu. Murzin and Tapio Salmi**
HYDROGENATION OF D-GALACTOSE OVER A Ru/Al_2O_3 USING A SEMI-BATCH REACTOR SYSTEM
Åbo Akademi University (Turku), Finland

PP-II-11. **Musich P.G.[1], Kosova N.I.[1], Kurzina I.A.[1,2], Vosmerikov A.V.[3], Kurina L.N.[1]**
DIRECT ROUTE OF DIMETHYL ETHER SYNTHESIS FROM SYNTHESIS GAS AT MIXED CATALYSTS
[1]Tomsk State University (Tomsk), Russia
[2]Tomsk Polytechnic University (Tomsk), Russia
[3]Institute of Petroleum Chemistry SB RAS (Tomsk), Russia

PP-II-12. **Romanovskiy R.V., Ivanchina E.D., Ivashkina E.N., Kravtsov A.V.†**
OPTIMIZATION OF OPERATION REGIMES OF REACTOR FOR C_9-C_{14} ALKANES DEHYDROGENATION
Tomsk Polytechnic University (Tomsk), Russia

PP-II-13. **Pavlova T.[1], Vernikovskaya N.V.[1,2,3], Noskov A.S.[1,3]**
MATHEMATICAL MODELLING OF SOOT DEPOSITION WITH TAKING INTO ACCOUNT PARTICLES SIZE DISTRIBUTION IN DIESEL PARTICULATE FILTERS
[1]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia
[2]Novosibirsk State University (Novosibirsk), Russia
[3]Novosibirsk State Technical University

SECTION III.
Chemical Reactors and Technologies for Emerging Applications

PP-III-1. **Chub O.V., Yazykov N., Dubinin Y., Simonov A.D., Yakovlev V.A., Noskov A.S.**
CATALYTIC COMBUSTION OF MUNICIPAL SEWAGE SLUDGE IN CATALYTIC FLUIDIZED BED REACTOR
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

PP-III-2. **Didenko L.P.[1], Voronetsky M.S.[1], Sementsova L.A.[1], Barelko V.[1], Bykov L.A.[2], Ivanyuk A.G.[3], Chepelenko V.N.[3], Brizitski O.F.[4], Terent'ev V.Ya.[4]**
TECHNICAL CHARACTERISTICS OF THE HYDROGEN–FILTERING MODULE ON A BASE OF THE PALLADIUM FOIL
[1]Institute of Problems of Chemical Physics RAS (Chernogolovka, Moscow region), Russia
[2]Chemphyst-Alloy (Chernogolovka, Moscow region), Russia
[3]Moscow Plant of Special Alloys (Moscow), Russia
[4]Russian Federal Nuclear Center – All-Russian Scientific Research Institute of Experimental Physics (Sarov), Russia

PP-III-3. **Dorokhov V.G., Barelko V., Bykov L.A., Bykova N.**
OPTIMIZATION OF FIBER-GLASS CATALYTIC MATERIALS FOR PURIFICATION OF STYRENE FRACTION FROM IMPURITY OF PHENYLACETYLENE BY THE SELECTIVE HYDROGENATION METHOD
Institute of Problems of Chemical Physics RAS (Chernogolovka, Moscow region), Russia

PP-III-4. **Galanov S.I., Sidorova O.I.**
PARTIAL OXIDATION OF NATURAL GAS IN AXIAL AND RADIAL REACTORS
Tomsk State University (Tomsk), Russia

PP-III-5. **Khromova S.A.[1,2], Smirnov A.A.[1,2], Reshetnikov S.I.[1], Yakovlev V.A.[1,2]**
ANISOLE HYDRODEOXYGENATION OVER Ni-Cu BIMETALLIC CATALYSTS : EFFECT OF Ni/Cu RATIO ON SELECTIVITY
[1]*Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia*
[2]*Novosibirsk State University (Novosibirsk), Russia*

PP-III-6. **Lima-Costa M., Rodrigues B., Raposo S.**
THE PERFORMANCE OF AN AERATED STIRRED TANK REACTOR ON VHG BATCH FERMENTATIONS
University of Algarve (Faro), Portugal

PP-III-7. **Mierczynski P.[1], Kaczorowski P.[1], Ura A.[1], Lasoń-Rydel M.[2], Maniecki T.P.[1]**
CONVERSION OF WAXES FORMED DURING THE FISCHER TROPSCH PROCESS TO DIESEL FUEL
[1]*Lodz University of Technology, Institute of General and Ecological Chemistry (Lodz), Poland*
[2]*Institute of Leather Industry (Lodz), Poland*

PP-III-8. **Mierczynski P.[1], Maniecki T.P.[1], Lasoń-Rydel M.[2]**
HYDROCRACKING OF WAXES TO FUEL FRACTION OVER BIFUNCTIONAL ZEOLITES CATALYSTS
[1]*Lodz University of Technology, Institute of General and Ecological Chemistry (Lodz), Poland*
[2]*Institute of Leather Industry (Lodz), Poland*

PP-III-9. **Mierczynski P.[1], Vasilev K.[2], Mierczynska A.[3], Maniecki T.P.[1]**
HYDROGEN PRODUCTION FOR FUEL CELLS TECHNOLOGY BY STEAM REFORMING OF METHANOL
[1]*Lodz University of Technology, Institute of General and Ecological Chemistry (Lodz), Poland*
[2]*University of South Australia (Adelaide), Australia*
[3]*University of South Australia, Ian Wark Research Institute (Adelaide), Australia*

PP-III-10. **Muhidinov Z.K.[1], Gorshkova R.M.[1], Khalikov D.K.[1], Teshaev K.I., L.S. Liu[2]**
GRAVITY FLOW DYNAMIC METHOD FOR HYDROLYSIS AND EXTRACTION OF PECTIN FROM SUNFLOWER
[1]*Nikitin Institute of Chemistry of Tajikistan Academy of Sciences (Dushanbe), Tajikistan*
[2]*Eastern Regional Research Center ARS USDA (Wyndmoor, Pennsylvania), USA*

PP-III-11. **Pai Z.P.[1], Pai V.V.[2], Parmon V.[1]**
METHOD OF CLEANING OF CRACK SURFACES OF NICKEL-BASED ALLOY PRODUCTS
[1]*Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia*
[2]*Lavrentyev Institute of Hydrodynamics (Novosibirsk), Russia*

PP-III-12. **Raposo S., Lima-Costa M.**
MIXING EFFICIENCY ON PLANT CELL GROWTH AND PROTEINASE PRODUCTION IN A STIRRED TANK REACTOR
University of Algarve (Faro), Portugal

PP-III-13. **San Jose M., Alvarez S., Peñas F., Garcia I., Zurdo C.**
THERMAL EXPLOITATION OF FRUIT TREE PRUNING WASTES IN A NOVEL CONICAL SPOUTED BED COMBUSTOR
Faculty of Engineering of Bilbao (University of the Basque Country) (Bilbao), Spain

PP-III-14. **Selishcheva S., Reshetnikov S.I., Kukushkin R., Yakovlev V.**
KINETIC INVESTIGATION OF PLANT OILS HYDROCRACKING WITH HIGH CETANE BIOFUEL PRODUCTION
Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia

PP-III-15. **Sidorova O.I., Galanov S.I.**
CATALYTIC OXIDATIVE DEHYDROGENATION AND CRACKING OF C_3-C_4 ALCANES TO OLEFINS OVER MANGANESE-CONTAINING CATALYSTS
Tomsk State University (Tomsk), Russia

PP-III-16. **Sulman M., Shimanskaya E., Doluda V., Sulman E., Matveeva V.**
CATALYTIC SYNTHESIS OF 2-METHYL-1,4-NAPHTHOQUINONE IN SUPERCRITICAL CARBON DIOXIDE
Tver Technical University (Tver), Russia

PP-III-17. **Tungatarova S.A., Abdukhalykov D.B., Baizhumanova T.S., Ergazieva G.E.**
OXIDATION OF ALKANES INTO OLEFINS ON THE POLYOXIDE CATALYSTS
D.V. Sokolsky Institute of Organic Catalysis and Electrochemistry (Almaty), Kazakhstan

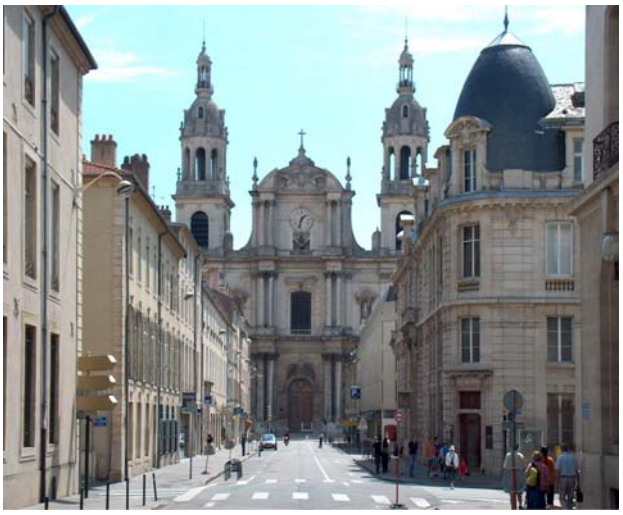
PP-III-18. **Tungatarova S.A., Zheksenbaeva Z.T., Omarova N.O., Shaizadauly E.**
DEEP OXIDATION OF TOLUENE ON POLY-OXIDE NICKEL-COPPER-CHROMIUM CATALYST
D.V. Sokolsky Institute of Organic Catalysis and Electrochemistry (Almaty), Kazakhstan

PP-III-19. **Vernikovskaya M.[1,2,3], Snytnikov P.[1,2,3], Kirillov V.[1,2,3], Sobyanin V.[1,2]**
CATALYTIC CONVERSION OF ASSOCIATED PETROLEUM GAS INTO METHANE-HYDROGEN GAS MIXTURES. ECONOMIC BENEFITS FOR USING WITH ICE- AND SOFC–BASED POWER GENERATION UNITS
[1]Boreskov Institute of Catalysis SB RAS (Novosibirsk), Russia
[2]Novosibirsk State University (Novosibirsk), Russia
[3]"UNICAT" Ltd (Novosibirsk), Russia

SOCIAL PROGRAM OF THE XX INTERNATIONAL CONFERENCE ON CHEMICAL REACTORS CHEMREACTOR-20

December 2, Sunday, 5.30 p.m.	Excursion to Nancy
December 3, Monday, 7.00 p.m.	Welcome reception
December 4, Tuesday, 5.00 p.m.	City-Tour (Guide Excursion around Luxemburg)
December 5, Wednesday, 7.30 p.m.	Conference Banquet
December 6, Thursday, 2.00 p.m.	Excursion to Metz, France
December 7, Friday, 10.00 a.m.	Excursion to Trier, Germany
December 8, Saturday, 9.00 a.m.	Excursion to Brugge, Belgium

EXCURSION TO NANCY



Nancy is a city in the north-eastern French department of Meurthe-et-Moselle and formerly the capital of Lorraine, French province. The earliest signs of human settlement in the area date back to 800 BC. Early settlers were likely attracted by easily mined iron ore and a ford in the Meurthe River. A small fortified town named Nanciacum (Nancy) was built by Gerard, Duke of Lorraine around 1050. Lorraine is proud of its strategic position at the border of Belgium, Luxembourg and Germany. A strategic position at the crossroads of Europe explains Lorraine's long, colorful and often turbulent history, which has endowed two major cities with diverse artistic wealth: Metz, once a Gallo-Roman stronghold; and Nancy, whose elegant 18th-century buildings make artwork out of urban architecture.

In the 18th century Nancy had already become a centre of European culture. The old city centre's heritage dates from the Middle Ages to the 18th century. The cathedral of Nancy, the Triumphal Arch and the "Place de la Carriere" are a fine examples of 18th century architecture. At the end of the 19th century, Nancy became a major influence in Europe's Art Nouveau movement. The city is known for its World Heritage buildings and places: The Place Stanislas named after the king of Polish-Lithuanian Commonwealth and duke of Lorraine Stanisław Leszczyński, Place de la Carrière, and Place d'Alliance were added on the World Heritage Sites list by the UNESCO in 1983.

The "École de Nancy", a group of artists and architects founded by the glassmaster and furniture maker Émile Gallé, worked in the Art Nouveau style at the end of the 19th century and the early 20th century. It was principally their work which made Nancy a centre of art and architecture that rivaled Paris and helped give the city the nickname "Capitale de l'Est." The city still possesses many Art Nouveau buildings (mostly banks or private homes). The city still possesses many Art Nouveau buildings (mostly banks or private homes). The trimmings of the decorative arts are conserved at the Musée de l'École de Nancy.

LUXEMBOURG CITY-TOUR

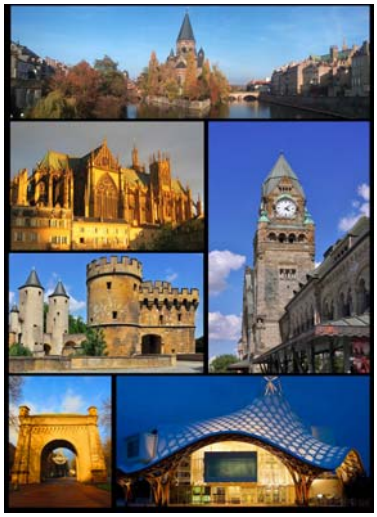
Luxembourg City lies on the southern part of the Luxembourg plateau, a large Early Jurassicsandstone formation that forms the heart of the Gutland, a low-lying and flat area that covers the southern two-thirds of the country. The recorded history of Luxembourg begins with the acquisition of Lucilinburhuc (today Luxembourg Castle) situated on the Bock rock by Siegfried, Count of Ardennes in 963 through an exchange act with the abbey of St Maximin in Trier. Around this fort, a town gradually developed, which became the centre of a small state of great strategic value.

The city centre occupies a picturesque site on a salient, perched high on precipitous cliffs that drop into the narrow valleys of the Alzette and Pétrusserivers, whose confluence is in Luxembourg City. The 70 m deep gorges cut by the rivers are spanned by many bridges and viaducts, including the Adolphe Bridge, the Grand Duchess Charlotte Bridge, and the Passerelle. Although Luxembourg City is not particularly large, its layout is complex, as the city is set on several levels, straddling hills and dropping into the two gorges.

Despite the city's comparatively small size, it has several notable museums: the recently renovated National Museum of History and Art (MNHA), the Luxembourg City History Museum, the new Grand Duke Jean Museum of Modern Art (Mudam) and National Museum of Natural History (NMHN). The city of Luxembourg itself is on the UNESCO World Heritage List, on account of the historical importance of its fortifications. In addition to its two main theatres, the Grand Théâtre de Luxembourg and the Théâtre des Capucins, there is an impressive new concert hall, the Philharmonie, as well as a conservatory with a large auditorium. Art galleries include the Villa Vauban, the Casino Luxembourg and Am Tunnel.

Luxembourg was the first city to be named European Capital of Culture twice. The first time was in 1995. In 2007, the European Capital of Culture was to be a cross-border area consisting of the Grand Duchy of Luxembourg, the Rheinland-Pfalz and Saarland in Germany, the Walloon Region and the German-speaking part of Belgium, and the Lorraine area in France. The event was an attempt to promote mobility and the exchange of ideas, crossing borders in all areas, physical, psychological, artistic and emotional.

EXCURSION TO METZ



Metz (French pronunciation of "listen") is a city in the northeast of France located at the confluence of the Moselle and the Seille rivers. Metz is the capital of the Lorraine region and prefecture of the Moselle department. Located near the junction of France, Germany, and Luxembourg, Metz forms a central place of the European Greater Region. A historic Garrison town, Metz is the economic heart of the Lorraine region, being specialized in information technology and automotive industries. Metz is home to the University of Lorraine and a center for applied research and development in the materials sector notably in metallurgy and metallography, the heritage of the Lorraine region's past in the iron and steel industry.

The Saint-Louis square with its arcades, where currency changers gathered, remains a major symbol of the High Medieval heritage of the city, as well as, a Knights Templar chapel. The Gothic Saint-Stephen Cathedral, several churches and Hôtels, and two remarkable municipal granaries reflect the Late Middle Ages. Examples of Renaissance architecture can be seen in Hôtels from the 16th century, such as the House of Heads. The Centre Pompidou-Metz is a museum of modern and contemporary arts, the largest temporary exhibition area outside Paris in France. The museum features exhibition from the extensive collection of the Centre Pompidou, the Europe's largest collection of 20th century art.

In addition, Metz features other museums and exhibition venues. The Golden Courtyard is a museum dedicated to the history of Metz, divided into four sections (e.g. archeology, medieval, architecture, and fine arts). The Saint-Stephen Cathedral exhibits the rich collection of the Bishopric of Metz, including the items used in the service of the Eucharist. The Lorraine Contemporary Arts Gallery is located in the Saint-Liver Hôtel and organizes exhibitions of local and international contemporary artists. The Verlaine museum is located in the native house of the poet and is dedicated to his artworks.

Many events are celebrated in Metz throughout the year. The city of Metz dedicates two weeks to the Mirabelle plum during the Mirabelle Festival held in August. In addition to open markets selling fresh prunes, mirabelle tarts, and mirabelle liquor, there is live music, fireworks, parties, art exhibits, a parade with floral floats and competition, and the crowning of the Mirabelle Queen and a gala of celebration. Also, a festival of literature is held in June. The Montgolfiades hot air balloon festival is organized in September. The Metz White Night festival takes place in October. The second most popular Christmas Market in France occurs in November and December. Finally, a Saint Nicholas parade honors the patron saint of the Lorraine region in December.

EXCURSION TO TRIER

Trier is a historic city in west central Germany, just six miles from the Luxembourg border and 120 miles SW of Frankfurt. Trier is Germany's oldest city. Legend has it that in 2000 BC the Assyrians established a colony here. The Roman colony of Augusta Treverorum (Trier) was founded by Augustus in 16 BC. Trier became a favored residence of several Roman emperors, including Constantine the Great, the first Christian emperor. The cathedral Constantine built in Trier in 326 AD is Germany's oldest. After destruction by Germanic tribes in the 5th century, the great city of Trier became a small town. It still feels pleasantly small today, despite its population of 100,000. Trier's market square (Hauptmarkt) is one of the nicest in Germany, filled with fruit stands, flowers, painted facades, and fountains. Catholic pilgrims still come to Trier in large numbers to honor the relic of the Holy Robe at the Dom St. Peter and the tomb of St. Matthias in the Benedictine church named for him.

The happy coexistence of the old and the new - the illustrious past and a modern, youthful lifestyle - is precisely what gives Trier its special charm. You come across most of the places of interest, such as the centrepieces of all nine of its UNESCO world heritage sites, as you stroll around the town centre and sightseeing is easily combined with taking a break for a glass of Moselle wine in the medieval market square. Trier's vineyards actually start just 500 meters from the amphitheater.

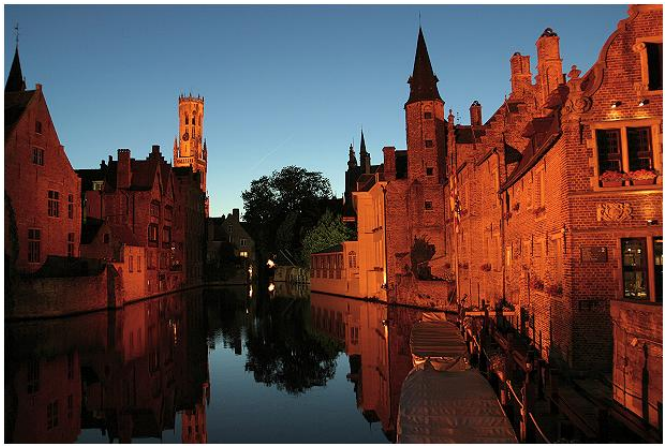
The most famous places of interest are:

The Porta Nigra gate, staggeringly high and colossal, weathered sandstone blocks and Constantine's Basilica whose interior is the largest single room to have survived since antiquity. The imperial baths were part of the largest bathing complex in the Roman empire and can also be explored below ground. The amphitheater, the arena at the foot of Petrisberg hill that saw gladiatorial and animal combat, was where crowds of up to 20,000 cheered on the shows and is one of the venues for the modern-day Antiquity Festival together with the imperial baths.

Cathedral and Church of Our Lady stands on the site of a former palace of Emperor Constantine and still contains part of the Roman original. Its art and architecture covers a time span of more than 1,650 years. Directly adjacent stands the earliest Gothic church in Germany, the Church of Our Lady, built in the 13th century.

Zurlaubener Ufer, by the Kaiser-Wilhelm Bridge, is a quaint little spot on the Moselle. Formerly a fishing village, many of its houses date back to around 1800 and it has retained much of its traditional character.

EXCURSION TO BRUGGE



Brugge (Bruges in English) is located in the northwest of Belgium. It is the capital and largest city of the province of West Flanders in the Flemish Region. The historic city center is a prominent World Heritage Site of UNESCO. It is oval-shaped and about 430 hectares in size. Its medieval old-town and its charming canals makes Brugge one of the most picturesque towns in Belgium, also called the “Venice of the North”.

Brugge is an outstanding example of a medieval historic settlement, which has maintained its historic fabric as this has evolved over the centuries, and where original Gothic constructions form is a part of the town's identity. As one of the commercial and cultural capitals of Europe, Brugge developed cultural links to different parts of the world. It is closely associated with the school of Flemish Primitive painting.

The most important of the squares are the Burg and the Grand'Place. For some 1,000 years the Burg square has remained the symbol of the alliance of religious and civic authorities, as well as the seat of several public

institutions, including the dispensing of justice. The Grand'Place, on the other hand, is the site of the halls, the belfry and the Waterhalle, symbolizing municipal autonomy.

The architecture of Brugge, from the Middle Ages until modern times, is principally characterized by brick Gothic, and particularly by a style of construction known astravée brugeoise. This type of construction was well established in the early 16th century and, with some later variations, it was maintained until the 17th century. It also became the main inspiration for 19th-century restorations.

Brugge is a romantic open-air museum with churches and patrician houses. One can look at picturesque Groene Reie, the beautiful old houses along the river, the typical cobbled squares with their ancient coloured and ornate houses reminding us of another time.