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

Ghent University, Ghent, Belgium

European Federation on Chemical Engineering

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PLENARY LECTURES

PL-1 **Professor Jens Kehlet Nørskov**
Technical University of Denmark, Lyngby, Denmark
A Professor Mikhail Slin'ko Honorary Lecture
CATALYSIS FOR SUSTAINABLE PRODUCTION OF FUELS AND CHEMICALS

PL-2 **Professor Vemuri Balakotaiah**
University of Houston, USA
AUTOTHERMAL REACTOR DESIGN FOR CATALYTIC PARTIAL OXIDATIONS

PL-3 **Professor Dionisios G. Vlachos**
University of Delaware, Newark, Delaware, USA
MULTI-LEVEL BRIDGE BETWEEN REACTION ENGINEERING AND COMPUTATIONAL CATALYSIS

PL-4 **Professor Dr.-Ing. Kai Sundmacher**
Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany
SOLVENT SELECTION AND TUNING FOR SUSTAINABLE CHEMICAL PROCESSES

PL-5 **Mr. Clayton C. Sadler**
UOP LLC, A Honeywell Company, USA
METHANOL TO OLEFINS: CONCEPT TO COMMERCIALIZATION

KEYNOTE LECTURES

KL-1 **Professor Manos Mavrikakis**
University of Wisconsin, Madison, Wisconsin, USA
PREDICTION OF REACTION RATES FOR IMPROVED CATALYST DESIGN AT THE ATOMIC SCALE

KL-2 **Professor José Carlos Brito Lopes**
University of Porto, Portugal
The NETmix REACTOR: CONCEPTS, TECHNOLOGY AND PRODUCTS

KL-3 **Professor Eugeniusz Molga**
Warsaw University of Technology, Poland
APPLICATION OF NEURAL NETWORKS TO APPROXIMATE AND GENERALIZE EXPERIMENTAL DATA

KL-4 **Professor Mario Montes,** Oihane Sanz
University of the Basque Country, San Sebastián, Spain
SCTRUCTURED CATALYSTS AND REACTORS FOR PROCESS INTENSIFICATION

KL-5 **Dr. Benedicte Cuenot**
Centre Européen de Recherché et de Formation Avancée en Calcul Scientifique, Toulouse, France
NUMERICAL SIMULATION OF COMBUSTION: FROM FUNDAMENTALS TO APPLICATIONS

KL-6 **Dr. Marco Van Goethem**
Technip Benelux B.V., Zoetermeer, The Netherlands
TechnipFMC's SWIRL FLOW TUBE® RADIANT COIL: FROM PATENT TO APPLICATION

SCIENTIFIC PROGRAM

Advances in Chemical Reactor Fundamentals

Chemical Reaction Kinetics

Energy & Mass Transfer in Chemical Reactors and first principles calculations

Fundamentals of Hydrodynamics and Fluid Flow in Chemical Reactors

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

Mathematical Simulation: Multiscale Analytic and Computational Studies of Chemical Reactors

Development of Chemical Reactors and Flow-Sheeting of Reactive Processes

New Chemical Reactor Designs (e.g., Structured Reactors, Membrane Reactors, Microreactors)

Process Intensification and Novel Approaches in Multifunctional Reaction Processes (e.g., Microwave/Induction Heated Reactors, Ultrasonic Reactors, Unsteady-State Forcing and Sorption Enhancement in Chemical Reactors, Multifunctional Reactors, Nature-Inspired Engineering of Reaction Processes, High-gravity, High-Shear Reactors)

Chemical Reactors and Technologies for Targeted Applications

Environmental Protection and Utilization of Waste

Reactors for Polymers and Other Novel Materials with Targeted Properties

Processing of Biomass and Renewable Feedstocks

Electrochemical and Photochemical Reaction Engineering

Biochemical Engineering

CO_2 Sequestration and Utilisation

Advanced Processing of Conventional and Unconventional Hydrocarbon Feedstocks

Modern Reactive Technologies for Natural Gas, Oil and Coal Processing

Chemical Processes for Intensification of Fuel Production

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

ORAL PRESENTATIONS

Section I. ADVANCES IN CHEMICAL REACTOR FUNDAMENTALS

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TESTING THE INVARIANT FOR THE NON-LINEAR CHEMICAL REACTION
[1]Ruhr-University Bochum, Bochum, Germany
[2]Max Planck Institute for Chemical Energy Conversion, Mulheim an der Ruhr, Germany
[3]Washington University in St. Louis, St. Louis, MO, USA
[4]Ghent University, Ghent, Belgium

OP-I-2 **Quaglio M.,** Waldron C., Pankajakshan A., Gavriilidis A., Galvanin F.
A MODEL-BASED DATA MINING APPROACH FOR OUTLIER DETECTION IN KINETIC MODELLING STUDIES
Chemical Engineering Department, University College London, London, United Kingdom

OP-I-3 **Till Z.,** Varga T., Chován T.
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University of Pannonia, Veszprém, Hungary

OP-I-4 **Slinko M.M.[1],** Makeev A.G.[2], Luss D.[3]
MECHANISM OF CO OXIDATION OVER Pt-GROUP METALS UNDER HIGH PRESSURE CONDITIONS: Langmuir–Hinshelwood or Mars–van Krevelen?
[1]Semenov Institute of Chemical Physics RAS, Moscow, Russia
[2]Lomonosov Moscow State University, Moscow, Russia
[3]University of Houston, USA

OP-I-5 **Yablonsky G.[1],** Stokie D.[1], Kumfer B.[1], Verma P.[1], Min Y.[1], Zhu Y.[1], Jun Y.[1], Suresh A.[2], Axelbaum R.[2]
THE KINETICS OF FLUE GAS PURIFICATION FOR PRESSURIZED OXY-COMBUSTION
[1]Washington University in St. Louis, St. Louis, MO, USA
[2]Indian Institute of Technology Bombay, Mumbai, India

OP-I-6 **Kolb G.[1,2],** Ortega C.[2], Hessel V.[2]
DIMETHYL ETHER CONVERSION TO GASOLINE GRADE HYDROCARBONS OVER ZSM-5: KINETIC STUDY IN A RECYCLE REACTOR
[1]Fraunhofer IMM, Mainz, Germany
[2]Eindhoven University of Technology, Eindhoven, The Netherlands

OP-I-7 **Standl S.[1],** Kühlewind T.[1], Kirchberger F.M.[1], Tonigold M.[2], Lercher J.A.[1], Hinrichsen O.[1]
METHANOL-TO-OLEFINS (MTO) on ZSM-5: SINGLE-EVENT KINETIC MODELING, MECHANISTIC ANALYSIS AND REACTOR DESIGN
[1]Technical University of Munich, Munchen, Germany
[2]Clariant Produkte (Deutschland) GmbH, Bruckmühl, Germany

OP-I-8 **Petrov R.[1],** Nazimov D.[1], Klimov O.[1], Noskov A.[1], Parakhin O.[2]
KINETIC MODEL FOR n-BUTANE TO BUTADIENE DEHYDROGENATION ON Cr-Al CATALYST
[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia
[2]LLC «SPAC «Sintez», Barnaul, Russia

OP-I-9 **Alvarado Camacho C.[1]**, Thybaut J.[2], Ruiz Martinez R.[1], Morales A.[1], Castillo-Araiza C.O.[1]
KINETIC ASSESSMENT OF THE OXATIVE DEHYDROGENATION OF ETHANE USING a NiSnO CATALYSTS
[1]Autonomous Metropolitan University-Iztapalapa, Iztapalapa, Mexico
[2]Ghent University, Ghent, Belgium

OP-I-10 **Chizhik S.A.[1,2],** Popov M.P.[1], Nemudry A.P.[1]

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[1]Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia
[2]Novosibirsk State University, Novosibirsk, Russia

OP-I-11 **Arutyunov V.S.[1,2],** Troshin K.Y.[1,3], Nikitin A.V.[1,3], Kiryushin A.A.[2], Belyaev A.A.[1,3], Ozerskii A.V.[1,3], Komarov I.K.[1,3], Strekova L.N.[1]

SELF-IGNITION DELAY OF METHANE-ALKANE FUEL COMPOSITIONS

[1]Semenov Institute of Chemical Physics RAS, Moscow, Russia
[2]ONCLEN LLC, Moscow, Russia
[3]Noncommercial Partnership Center of Pulse Detonation Combustion, Moscow, Russia

OP-I-12 Skudin V., **Gavrilova N.N.**

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[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia
[2]Novosibirsk State University, Novosibirsk, Russia
[3]AET OG "INTECH", Ufa, Russia

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[1]East China University of Science and Technology, Shanghai, China
[2]Chemical Engineering Department, University College London, London, United Kingdom

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[1]National University of Colombia, Medellin, Colombia
[2]Ghent University, Laboratory for Chemical Technology, Ghent, Belgium

OP-I-25 **Greiner R.[1,2]**, Prill T.[3], Iliev O.[3], van Setten B.[2], Votsmeier M.[1,2]
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[1]Darmstadt University of Technology, Darmstadt, Germany
[2]Umicore AG & Co. KG, Hanau, Germany
[3]Fraunhofer ITWM, Kaiserslautern, Germany

Section II. CHEMICAL REACTION ENGINEERING AND REACTOR DESIGN – NOVEL EXPERIMENTAL APPROACHES, MODELING, SCALE-UP AND OPTIMIZATION

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OP-II-4 **Placha M.[1],** Koci P.[1], Isoz M.[1], Vaclavik M.[1], Svoboda M.[2], Price E.[3], Novak V.[3], Thompsett D.[3]

PORE-SCALE MODELING OF COATED CATALYTIC FILTERS

[1]University of Chemistry and Technology, Prague, Czech Republic
[2]University of West Bohemia, Pilsen , Czech Republic
[3]Johnson Matthey Technology Centre, Sonning Common, Reading, United Kingdom

OP-II-5 **Vernikovskaya N.V.[1,2],** Ovchinnikova E.V.[1], Chumachenko V.A.[1], Gribovskii A.G.[1], Makarshin L.L.[1]

MATHEMATICAL MODELING OF HIGHLY EXOTHERMAL PROCESSES IN MICRO-CHANNEL REACTORS

[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia
[2]Novosibirsk State Technical University, Novosibirsk, Russia

OP-II-6 **Minette F.**, De Wilde J.

MULTI-SCALE MODELING OF AN ANNULAR STRUCTURED CATALYTIC REACTOR: APPLICATION TO STEAM METHANE REFORMING

Catholic University of Leuven, Louvain-la-Neuve, Belgium

OP-II-7 **Claes T.,** Leblebici M.E., Van Gerven T.

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Catholic University of Leuven, Leuven, Belgium

OP-II-8 **Boon J.[1,2]**

THE SORBENT AND THE PROCESS: CO_2 and H_2O SORPTION ENHANCEMENT IN CHEMICAL REACTORS

[1]Sustainable Process Technology, ECN, Energy Research Center of the Netherlands, Petten, The Netherlands
[2]Eindhoven University of Technology, Eindhoven, The Netherlands

OP-II-9 **Zazhigalov S.[1],** Zagoruiko A.[1,2]

HYDROGEN PRODUCTION BY SORPTION-ENHANCED STEAM REFORMING OF HYDROCARBONS WITH AUTOTHERMAL SORBENT REGENERATION IN A SUPER-ADIABATIC HEAT FRONT OF CATALYTIC COMBUSTION REACTION

[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia
[2]National Research Tomsk Polytechnic University, Tomsk, Russia

OP-II-10 **Bremer J.[1],** Sundmacher K.[1,2]

FLEXIBLE PRODUCTION OF SYNTHETIC METHANE: DYNAMIC OPERATION AND CONTROL OF FIXED-BED METHANATION REACTORS

[1]Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany
[2]Otto-von-Guericke University Magdeburg, Magdeburg, Germany

OP-II-11 **Fukuhara C.[1],** Watanabe R.[1], Ratchahat S.[2], Sudoh M.[2]

A POWERFUL CO_2 METHANATION REACTOR with Ni/CeO_2 STRUCTURED CATALYST: ESTIMATION OF MASS AND HEAT TRANSFER PROFILES

[1]Shizuoka University, Naka-ku Hamamatsu, Shizuoka, Japan
[2]Amano Institute of Technology, Hosoecho, Hamamatsu, Shizuoka, Japan

OP-II-12 Shoynkhorova T.B.[1], **Snytnikov P.[1,2,3]**, Simonov P.[1,3], Potemkin D.[1,2], Rogozhnikov V.[1], Kulikov A.[1], Belyaev V.[1,2,3], Sobyanin V.[1]

SYNGAS PRODUCTION FOR SOFC VIA CATALYTIC OXIDATION OF DIESEL FUEL

[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia
[2]Novosibirsk State University, Novosibirsk, Russia
[3]UNICAT Ltd, Novosibirsk, Russia

OP-II-13 **He Z.,** Minette F., De Wilde J.
NUMERICAL SIMULATION OF INDUSTRIAL SCALE AUTOTHERMAL CHEMICAL LOOPING METHANE REFORMING FOR SYNGAS PRODUCTION IN A DUAL FLUIDIZED BED REACTOR
Catholic University of Leuven, Louvain-la-Neuve, Belgium

OP-II-14 **Cherkasov N.[1,2],** Bai Y.[1], Exposito A.[1], Rebrov E.[1,2]
PERFORMANCE AND SELECTIVITY COMPARISON OF PACKED BED AND TUBE REACTORS IN SELECTIVE HYDROGENATION
[1]Stoli Catalysts Ltd, Coventry, United Kingdom
[2]University of Warwick, Coventry, United Kingdom

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Politecnico di Milano, Milan, Italy

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Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia

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MODELING OF CO_2 ADSORPTION ON SUPPORTED AMINE SORBENTS IN A MULTISTAGE FLUIDIZED BED
Sustainable Process Technology, University of Twente, Enschede, The Netherlands

OP-II-18 **Fernengel J.[1],** Bolton L.[2], Hinrichsen O.[1]
CHARACTERISATION AND DESIGN OF SINGLE PELLET STRING REACTORS USING NUMERICAL SIMULATION
[1]Technical University of Munich, Garching, Germany
[2]BP, Sunbury-on-Thames, United Kingdom

OP-II-19 **Frey M.,** Violet L., Seyidova L., Richard D., Fongarland P.
HYBRID CATALYSIS: A NEW REACTOR DESIGN FOR ONE-POT SYNERGISTIC COUPLING OF ENZYMATIC AND HETEROGENEOUS CATALYSIS
Laboratory of Catalytic Process Engineering, CNRS-CPE-Lyon, Villeurbanne, France

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MULTIPHASE REACTOR MODELING FOR REACTIVE PROCESSING OF POLYOLEFINES
[1]Ghent University, Ghent, Belgium
[2]SABIC Geleen, Geleen, The Netherlands

OP-II-21 **Jokiel M.[1],** Sundmacher K.[1,2]
NOVEL REACTOR DESIGNS FOR THE HYDROFORMYLATION OF LONG-CHAIN OLEFINS: FLEXIBILITY AND AUTOMATION ASPECTS
[1]Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany
[2]Otto-von-Guericke University Magdeburg, Magdeburg, Germany

OP-II-22 **Mohammad A.F.[1]**, El-Naas M.H.[2], Al-Marzouqi A.H.[1], Al-Marzouq M.H.[1], Suleiman M.I.[3], Al-Musharfy M.[3], Firmansyah T.[3]
CFD SIMULATION OF A NOVEL GAS-LIQUID REACTOR SYSTEM
[1]United Arab Emirates University, Al-Ain, United Arab Emirates
[2]Qatar University, Doha, Qatar
[3]ADNOC Refining Research Center, Abu Dhabi, United Arab Emirates

OP-II-23 Möller K., **Khazali A.**
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University of Cape Town, Cape Town, South Africa

OP-II-24 **Ovchinnikova E.V.,** Chumachenko V.A., Andrushkevich T.V.
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Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia

OP-II-25 **Rebrov E.**[1,2], Fernández-Garcia J.[2], Matveeva V.[1], Cherkasov N.[2], Sulman E.[1]
TRANSIENT OPERATION: A NOVEL WAY TO ENHANCE SELECTIVITY IN GLUCOSE ISOMERIZATION REACTION
[1]*Tver Technical University, Tver, Russia*
[2]*University of Warwick, Coventry, United Kingdom*

OP-II-26 **Chakraborty S.,** Paul S.K., Dutta S.K.
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Indian Institute of Technology Kharagpur, Kharagpur, India

OP-II-27 **Al-Dalama K.**
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Kuwait Institute For Scientific Research, Kuwait City, Kuwait

OP-II-28 **Cordero-Lanzac T.**, Aguayo A.T., Castaño P., Bilbao J.
MODELING THE CONVERSION OF DIMETHYL ETHER INTO OLEFINS CONSIDERING THE HZSM-5 BASED CATALYST DEACTIVATION
University of the Basque Country, San Sebastian, Spain

OP-II-29 **Venezia B.**[1]**,** Ellis P.[2], Gavriilidis A.[1]
CONTINUOUS CATALYTIC AEROBIC OXIDATION OF BENZYL ALCOHOL IN A SLURRY TUBE-IN-TUBE REACTOR USING Au-Pd/TiO_2 CATALYST
[1]*Chemical Engineering Department, University College London, London, United Kingdom*
[2]*Johnson Matthey Technology Centre, Sonning Common, Reading, United Kingdom*

OP-II-30 Freites Aguilera A.[1], **Tolvanen P.**[1]**,** Leveneur S.[1,2] , Mikkola J.[1,3], Marchhat T.[4], Salmi T.[1]
MODELING OF MICROWAVE IRRADIATED AND HETEROGENEOUSLY CATALYSED EPOXIDATION OF VEGETABLE OILS
[1]*Åbo Akademi University, Turku, Finland*
[2]*Rouen Normandie University, Saint-Étienne-du-Rouvray, France*
[3]*Umea University, Umeå, Sweden*
[4]*University of Wollongong, Wollongong, Australia*

OP-II-31 **Liu Y.**[1], Li C.[*], Sheng B.[1], Wang Y.[1], Leus K.[2], Van Der Voort P.[2]
FLOW SYNTHESIS of MOF and COF MATERIALS
[1]*Dalian University of Technology, Dalian, China*
[2]*Ghent University, Ghent, Belgium*

Section III. CHEMICAL REACTORS AND TECHNOLOGIES FOR TARGETED APPLICATIONS

OP-III-1 **Rodriguez-Vega P.**, Ateka A., Aguayo A., Bilbao J.
DIRECT SYNTHESIS OF DIMETHYL ETHER (DME) from CO/CO_2 in a MEMBRANE REACTOR
[1]University of the Basque Country UPV/EHU, Bilbao, Spain

OP-III-2 **Ozturk N.F.**, Avci A.K.
INTENSIFIED DME PRODUCTION FROM SYNTHESIS GAS WITH CO_2
Bogazici University, Istanbul, Turkey

OP-III-3 Currie R.[1], Nikolic D.[2], Petkovska M.[2], **Simakov D.**[1]
CO_2 CONVERSION ENHANCEMENT IN A PERIODICALLY OPERATED SABATIER REACTOR: NONLINEAR FREQUENCY RESPONSE ANALYSIS AND SIMULATION-BASED STUDY
[1]University of Waterloo, Waterloo, Ontario, Canada
[2]University of Belgrade, Belgrade, Serbia

OP-III-4 Lan L., Wang A., **Wang Y.**
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D*alian University of Technology, Dalian, China*

OP-III-5 **Moioli E.,** Gallandat N., Züttel A.
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Federal Institute of Technology in Lausanne, Lasuanne, Switzerland
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OP-III-6 **Dubinin Y.V.[1,2],** Yazykov N.[1], Simonov A.[1], Yakovlev V.[1,2]
COMBUSTION IN THE FLUIDIZED BED OF CATALYST AS AN EFFECTIVE METHOD OF OIL WASTE UTILIZATION
[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia
[2]Novosibirsk State University, Novosibirsk, Russia

OP-III-7 **Frassoldati A.**, Faravelli T., Cuoci A., Saufi A.E., Calabria R., Chiariello F., Massoli P.
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Politecnico di Milano (Milan), Italy

OP-III-8 **Krasnikov D.V.[1],** Iakovlev V.Ya.[1], Gilshteyn E.P.[1], Kopylova D.S.[1], Grebenko A.K.[1], Tsapenko A.P.[1], Nasibulin A.G.[1,2]
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[1]Skolkovo Institute of Science and Technology, Moscow, Russia
[2]Aalto University, Espoo, Finland

OP-III-9 Marathe P., Westerhof R., **Kersten S.**
PYROLYSIS OF LIGNIN: EFFECTS OF MOLECULAR WEIGHT AND BOND TYPE
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OP-III-10 **Hočevar B.[1,2],** Huš M.[1], Grilc M.[1], Likozar B.[1]
MUCIC ACID HYDRODEOXYGENATION OVER METAL CATALYSTS
[1]National Institute of Chemistry, Ljubljana, Slovenia
[2]University Ljubljana, Slovenia

OP-III-11 **Möller K.,** Mhlongo M., Dalton R., Embling N., Collins R.
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University of Cape Town, Cape Town, South Africa

OP-III-12 **Nuñez Manzano M.**, Kulkarni S.R., Marin G.B., Nopens I., Heynderickx G.J., Van Geem K.
PROOF OF CONCEPT CFD STUDY OF POLYSTYRENE PYROLYSIS IN A GAS-SOLID VORTEX REACTOR
Ghent University, Ghent, Belgium

OP-III-13 **Santos E.,** Lemos M.A., Lemos F.
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Instituto Superior Técnico, Lisboa, Portugal

OP-III-14 **Violet L.**, Mifleur A., Vanoye L., Favre-Réguillon A., Philippe R., Fongarland P.
CATALYTIC DEHYDROGENATION COUPLING OF ALCOHOLS TO ESTERS: MECHANISM AND KINETIC STUDIES FOR MODELLING PURPOSES
Laboratory of Catalytic Process Engineering, UMR CNRS, Villeurbanne, France

OP-III-15 **Sulman A.[1],** Matveeva V.[1,2], Lakina N.[1], Golikova E.[1], Sulman M.[1], Tikhonov B.[1], Sidorov A.[1], Sulman E.[1]
MAGNETICALLY SEPARABLE BIOCATALYSTS BASED ON IMMOBILIZED ENZYMES
[1]Tver State Technical University, Tver, Russia
[2]Tver State University, Tver, Russia

OP-III-16 **Shivaprasad P.,** Patterson D., Jones M., Emanuelsson E.
PROCESS INTENSIFICATION OF ENZYME CATALYSED KINETIC RESOLUTION OF 1-PHENYLETHANOL IN A SPINNING MESH DISC REACTOR
University of Bath, Bath, United Kingdom

Section IV. ADVANCED PROCESSING OF CONVENTIONAL AND UNCONVENTIONAL HYDROCARBON FEEDSTOCKS

OP-IV-1 **Song Y.[1],** Marrodán L.[2], Vin N.[1], Herbinet O.[1], Assaf E.[3], Fittschen C. [3], Stagni A.[4], Faravelli T.[4], Alzueta M.U. [2], Battin-Leclerc F. [1]
THE SENSITIZING EFFECTS OF NO_2 and NO ON METHANE LOW TEMPERATURE OXIDATION IN A JET STIRRED REACTOR
[1]CNRS-Université de Lorraine, Nancy, France
[2]University of Zaragoza, Zaragoza, Spain
[3]Université Lille, Lille, France
[4]Politecnico di Milano, Milan, Italy

OP-IV-2 **Fedotov A.[1],** Uvarov V.[2], Tsodikov M.[1]
INNOVATIVE HYBRID MEMBRANE-CATALYTIC TECHNOLOGY FOR SYNGAS, HYDROGEN AND VALUABLE MONOMERS PRODUCTION
[1]A.V. Topchiev Institute of Petrochemical Synthesis RAS, Moscow, Russia
[2]The Institute of Structural Macrokinetics, RAS, Moscow, Russia

OP-IV-3 Cheula R.[1], Soon A.[2], **Maestri M.[1]**
STRUCTURE-DEPENDENT MULTISCALE MODELLING OF CATALYTIC PROCESSES: AN APPLICATION TO THE CATALYTIC PARTIAL OXIDATION OF METHANE ON RHODIUM
[1]Politecnico di Milano, Milan, Italy
[2]Yonsei University, Seoul, South Korea

OP-IV-4 **Belinskaya N.S.[1],** Ivanchina E.D.[1], Frantsina E.V.[1], Lutsenko A.S.[1], Nazarova G.Y.[1], Glik P.A.[1], Dementyev A.Y.[2]

PROGNOSTIC MODELLING OF DESTRUCTIVE PROCESSES OF HYDROCARBON FEEDSTOCK CONVERSION

[1]National Research Tomsk Polytechnic University, Tomsk, Russia
[2]PJSC "KINEF", Tomsk, Russia

OP-IV-5 Krivtsova N.I., **Frantsina E.V.,** Ivanchina E.D., Belinskaya N.S., Tataurshchikov A.A.

MODELING OF THE DIESEL FUEL HYDRAULIC CLEANER REACTOR WITH THE ACCOUNT OF THE CATALYST DEACTIVATION

National Research Tomsk Polytechnic University, Tomsk, Russia

OP-IV-6 **Mekki-Berrada A.**, Zani M., Souchon V., Pereira De Oliveira L.C., Chainet F.

COMPARATIVE STUDY OF THE SULFUR SPECIATION by GC and GC×GC for GAS OIL CHARACTERIZATION in HDT PROCESS SIMULATION

IFP Energies Nouvelles, Solaize, France

OP-IV-7 **Madlokazi M.[1],** Möller K.[2]

A THERMODYNAMICALLY CONSISTENT REACTOR MODEL FOR THE FURNACE BLACK PROCESS

[1]Orion Engineered Carbons, Port Elizabeth, South Africa
[2]University of Cape Town, Cape Town, South Africa

OP-IV-8 Palos R., **Gutiérrez A.**, Castaño P., Azkoiti M.J., Arandes J.M., Bilbao J.

MODELING THE REMOVAL OF SULFUR, AROMATICS AND HEAVIER COMPOUNDS OF LIGHT CYCLE OIL

University of the Basque Country, Bilbao, Spain

OP-IV-9 **Muhammad I.,** Al-Smari T.

ADVANCEMENrbrslisttrgyangTS IN THE PROCESS AND CATALYST DEVELOPMENTS FOR ETHYLENE OXIDE AND ETHYLENE GLYCOL: CURRENT AND FUTURE PROSPECTS

Saudi Basic Industries Corporation (SABIC), Riyadh, Saudi Arabia

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Oral presentations

BIOLEUM session
November 6, Tuesday, afternoon

Intrdouction to Bioleum: Kevin Van Geem 10 min

SriBala G., Carstensen H., Van Geem K., Marin G.B.
ON THE REACTIVITY OF MONO-LIGNOL DERIVATIVES
Ghent University, Ghent, Belgium

Kulkarni S.R., **Gonzalez Quiroga A.,** Heynderickx G.J., Van Geem K., Marin G.B.
EXPERIMENTAL DEMONSTRATION OF BIOMASS FAST PYROLYSIS IN THE GAS-SOLID VORTEX REACTOR
Ghent University, Ghent, Belgium

Kulkarni S.R., Schuerewegen C., Manzano M.N., Heynderickx G.J., Van Geem K., Marin G.B.
EXPERIMENTAL HEAT TRANSFER MODELLING IN A GAS-SOLID VORTEX UNIT
Ghent University, Ghent, Belgium

Pala M., Guo K., Prévoteau A., Rabaey K., Ronsse F., Prins W.
ELECTROCHEMICAL UPGRADING OF FAST PYROLYSIS BIO-OIL
Ghent University, Ghent, Belgium

Jia C.[1], Bueken B.[1], Van Geem K.[2], De Vos D.[1]
ISOLATION OF PHENOLICS FROM BIO-OIL USING FLEXIBLE MIL-53 AS HIGHLY SELECTIVE ADSORBENT
[1]*Centre for Surface Chemistry and Catalysis K.U. Leuven, Leuven, Belgium*
[2]*Ghent University, Ghent, Belgium*

IMPROOF session
November 8, Thursday, afternoon

Intrdouction to IMPROOF: Kevin Van Geem 10 min

Namysl S.[1]**,** Pelucchi M.[2], Herbinet O.[1], Ranzi E.[2], Frassoldati A.[2], Faravelli T.[2], Battin-Leclerc F.[1]
THE OXIDATION OF LINEAR C_4-C_6 ALDEHYDES: AN EXPERIMENTAL AND KINETIC MODELLING STUDY
[1]*Reactions and Chemical Engineering Laboratory, CNRS, Lorraine University, Nancy, France*
[2]*Politecnico di Milano, Milan, Italy*

Pelucchi M.[1]**,** Namysl S.[2], Herbinet O.[2], Frassoldati A.[1], Faravelli T.[1], Battin-Leclerc F.[2]
AN EXPERIMENTAL AND KINETIC MODELLING STUDY OF C_4-C_5 CARBOXYLIC ACIDS PYROLYSIS AND OXIDATION IN A JET STIRRED REACTOR
[1]*Politecnico di Milano, Milan, Italy*
[2]*Reactions and Chemical Engineering Laboratory, CNRS, Lorraine University, Nancy, France*

Virgilio M.[1]**,** Van Geem K.[2], Arts T.[1], Marin G.B.[2]
EXPERIMENTAL AERO-THERMAL INVESTIGATIONS OF SWIRLING FLOWS IN THREE-DIMENSIONAL RIBBED TUBES
[1]*von Karman Institute for fluid dynamics, St. Gilles/Brussel, Belgium*
[2]*Ghent University, Ghent, Belgium*

Dedeyne J.N.[1], Virgilio M.[2], Arts T.[2], Van Geem K.[1], Marin G.B.[1]
PROCESS INTENSIFICATION IN STEAM CRACKING: FLOW CHARACTERISTICS OF SPHERICAL DIMPLES
[1]Ghent University (Ghent), Belgium
[2]von Karman Institute for fluid dynamics, St. Gilles/Brussel, Belgium

Vangaever S., Reyniers P., Heynderickx G.J., Van Geem K.
COMPUTATIONAL FLUID DYNAMIC-BASED STUDY OF THE STEAM CRACKING PROCESS USING A HYBRID 3D-1D APPROACH
Ghent University, Ghent, Belgium

Symoens S., Van Geem K., Djokic M., Zhang J., Bellos G., Jakobi D., Weigandt J., Klein S., Battin-Leclerc F., Heynderickx G., Cuenot B., Faravelli T., Theis G., Lenain P., Munoz A.E., Olver J., Thielen J.V.
"PAS DE DEUX" OF HIGH-TEMPERATURE ALLOY AND 3D REACTOR TECHNOLOGY FOR STEAM CRACKING COILS: IMPACT ON PRODUCT YIELDS AND COKE FORMATION
Ghent University, Ghent, Belgium

POSTER PRESENTATIONS

PP-1 Aksenov D.G., Kodenev E.G., Ovchinnikova E.V., Echevskii G.V., **Chumachenko V.**
PROCESSING of C4-FRACTION CONTAINED IN THE WASTE GASES OF REFINERIES BY CATALYTIC ISOMERISATION TO ISOBUTANE on Pd/SULFATED ZIRCONIA
Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia

PP-2 **Alghamdi N.**, Bavykina A., Gascon J., Sarathy S.
MODELING CO_2 to METHANOL CONVERSION IN A STAGNATION FLOW REACTOR
King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia

PP-3 **Antonnikova A.,** Arkhipov V.A., Basalaev S.A., Polenchuk S.N., Usanina A.S.
INFLUENCE OF SURFACTANT ON DYNAMICS OF ASCENT OF THE BUBBLES SYSTEM
Tomsk State University, Tomsk, Russia

PP-4 **Authayanun S.[1],** Saebea D.[2], Patcharavorachot Y.[3], Arpornwichanop A.[4]
MODEL BASED EVALUATION OF ALKALINE ANION EXCHANGE MEMBRANE FUEL CELLS WITH UNBALANCED PRESSURE OPERATION
[1]Srinakharinwirot University, Nakhon Nayok, Thailand
[2]Burapha University, Chonburi, Thailand
[3]King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand
[4]Chulalongkorn University, Bangkok, Thailand

PP-5 **Ayuba S,**[1], Kolesnikov I.[2]
CRACKING KINETICS USING MODIFIED ALUMINOSILICATE CATALYST WITH ALUMOPHENYLSILOXANE
[1]Nile University of Nigeria, Abuja, Nigeria
[2]Gubkin Russian State University of Oil and Gas, Moscow, Russia

PP-6 Bac S.[1], Say Z.[2], Bulutoglu P.[1], Ozensoy E.[2], **Avci A.K.[1]**
CO_2 REFORMING OF GLYCEROL OVER Rh-BASED CATALYSTS
[1]Bogazici University, Istanbul, Turkey
[2]Bilkent University, Ankara, Turkey

PP-7 **Bachurikhin A.[1],** Efendiev M.[2]
ELECTROMAGNETIC INSTALLATION FOR NEUTRALIZATION OF WASTEWATER PRODUCTION OF OLIVE OILS
[1]Gubkin I.M. Russian State University of Oil and Gas, Moscow, Russia,
[2]OJSC DagNefteProduct, Makhachkala City, Russia

PP-8 Bogdanov I., **Altynov A.,** Kirgina M.V.
CALCULATION METHOD FOR PREDICTION OF THE CETANE INDEX OF BLENDED DIESEL FUELS TAKING INTO ACCOUNT NON-ADDITIVITY
National Research Tomsk Polytechnic University, Tomsk, Russia

PP-9 **Bogdanov I.,** Altynov A., Kirgina M.V.
INFLUENCE OF DIESEL FUEL COMPOSITION ON THE EFFICIENCY OF THE LOW-TEMPERATURE ADDITIVES
National Research Tomsk Polytechnic University, Tomsk, Russia

PP-10 **Boukha Z.,** Ayastuy J., González-Velasco J., Gutiérrez-Ortiz M.
METALLIC MICROREACTORS FOR THE INTENSIFICATION OF CATALYTIC HYDROGEN PRODUCTION AND PURIFICATION PROCESSES
University of the Basque Country, Faculty of Science and Technology, Bilbao, Spain

PP-11 **Chawdhury P.,** Kumar D., Subrahmanyam Ch.
NTP ASSISTED SINGLE STEP METHANE CONVERSION TO METHANOL OVER Cu/Γ-Al_2O_3 CATALYST MODIFIED BY ZnO, ZrO_2 AND MgO AS PROMOTERS
Indian Institute of Technology Hyderabad, Telangana, India

PP-12 **Chistovalov S.**
MULTIFINCTIONAL CHEMICAL REACTOR
A.N. Nesmeyanov Institute of Organoelement Compounds RAS, Moscow, Russia

PP-13 **Chuzlov V.A**., Nazarova G.Y., Ivanchina E.D., Ivaskina E.N.
PREDICTIVE MODELLING OF CATALYTIC CRACKING AND FUELS BLENDING TO INCREASE OF THE GASOLINE PRODUCTION ECONOMICAL EFFICIENCY BY REDUCING THE QUALITY GIVEAWAY
National Research Tomsk Polytechnic University, Tomsk, Russia

PP-14 **Ciemiega A.[1]**, Maresz K.[1], Mrowiec-Bialon J.[1,2]
MONOLITHIC MICROREACTORS OF DIFFERENT STRUCTURE AS AN EFFECTIVE TOOL FOR MPV REACTION
[1]Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland
[2]Silesian University of Technology, Gliwice, Poland

PP-15 Currie R., **Simakov D.**
CATALYTIC HEAT EXCHANGER TYPE MEMBRANE REACTOR FOR CO_2 HYDROGENATION: MODEL-BASED ANALYSIS AND FEASIBILITY ASSESSMENT
University of Waterloo, Waterloo, Ontario, Canada

PP-16 **Davletbaeva I.M.[1,2]**, Akhmetshina A.I.[1,2], Kayumov M.N.[1], Gumerov A.M.[1], Davletbaev R.S.[3], Vorotyntsev I.V.[2]
WATER VAPOR PERMEABILITY OF POLYURETHANES BASED ON HYPERBRANCHED AMINO ETHERS OF BORIC ACID
[1]Kazan National Research Technological University, Kazan, Russia
[2]R.E. Alekseev Nizhny Novgorod State Technical University, Nizhny Novgorod, Russia
[3]Kazan National Research Technical University, Kazan, Russia

PP-17 **Dobrynkin N.M.,** Batygina M.V., Noskov A.S.
THE PROCESS DEVELOPMENT OF BAYERITE PREPARATION BY SELF-HYDROLYSIS OF ALUMINUM CHLORIDE HEXAHYDRATE IN BATCH REACTOR
Boreskov Institute of Catalysis, Novosibirsk, Russia

PP-18 Dolganov I., **Khlebnikova E.,** Dolganova I., Ivaskina E.N.
NUMERICAL SIMULATION OF BENZENE WITH ETHYLENE ALKYLATION CONSIDERING CATALYST DEACTIVATION
National Research Tomsk Polytechnic University, Tomsk, Russia

PP-19 **Dolganov I.M.,** Dolganova I.O., Ivanchina E.D., Ivashkina E.N., Shandybina A.V.
INDUSTRIAL SYNTHESIS OF LINEAR ALKYLBENZENE SULFONIC ACID IN A MULTISTAGE REACTOR PROCESS UNDER NONSTATIONARY CONDITIONS
National Research Tomsk Polytechnic University, Tomsk, Russia

PP-20 **Doluda V.[1],** Manaenkov O.[1], Nikoshvili L[1]., Stepacheva A.[1], Shimanskaya E.[1], Filatova A.[1], Matveeva V.[1,2], Sulman M.[1], Sulman E.[1]

COMPLEX CONVERSION OF BIOMASS OVER POLYMER-BASED CATALYSTS FOR THE PRODUCTION OF SECOND-GENERATION BIODERIVED FUELS

[1]Tver State Technical University, Tver, Russia

[2]Tver State University, Tver, Russia

PP-21 Dossumov K.[1], Yergaziyeva G.[2], Myltykbayeva L.[2], Telbayeva M.[2], **Dossumova B.[2]**

HYDROGEN PRODUCTION FROM METHANE OVER ALUMINA SUPPORTED NICKEL CATALYST

[1]Center of Physical and Chemical Methods of Research and Analysis, Almaty, Kazakhstan

[2]Institute of Combustion Problems, Almaty, Kazakhstan

PP-22 **Díaz M.,** Epelde Bejerano E., Aguayo A., Bilbao J.

BOOSTING GASOLINE AND DIESEL PRODUCTION BY 1-BUTENE OLIGOMERIZATION ON HZSM-5 ZEOLITES

University of the Basque Country, Faculty of Science and Technology, Bilbao, Spain

PP-23 Epelde Bejerano E., **Díaz M.**, Aguayo A., Bilbao J., Gayubo A.

KINETIC MODEL CONSIDERING CATALYST DEACTIVATION FOR THE TRANSFORMATION OF 1-BUTENE ON K/HZSM-5 ZEOLITE

University of the Basque Country, Faculty of Science and Technology, Bilbao, Spain

PP-24 **Ezdin B.,** Kalyada V., Ichshenko A., Zarvin A., Nikiforov A.

METHOD FOR OBTAINING NANOSIZED SILICON BY COMPRESSION IN A CYCLIC CHEMICAL REACTOR

Novosibirsk State University, Novosibirsk, Russia

PP-25 **Fazeli A.,** Karkeh-abadi M., Abbasi M.

KINETIC MODELING OF SELECTIVE OXIDATION OF H_2S ON $Fe_2O_3/Cr_2O_3/Al_2O_3$

University of Tehran, Iran

PP-26 **Frantsina E.V.**, Ivanchina E.D., Ivashkina E.N., Belinskaya N.S., Fefelova K.O.

THE STUDY OF COKE FORMATION IN MODELING THE DEHYDROGENATION OF HYDROCARBONS C9-C14

National Research Tomsk Polytechnic University, Tomsk, Russia

PP-27 **Gancarczyk A.,** Sindera K., Iwaniszyn M., Korpyś M., Kołodziej A.

TRANSPORT PHENOMENA IN RVC FOAMS

Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland

PP-28 **Gao M.[1,2],** Li H.[1], Ye M.[1], Liu Z.[1]

A REACTION-DIFFUSION MODEL FOR BRIDGING BETWEEN ZEOLITES AND CATALYST PELLETS IN MTO PROCESS

[1]Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China

[2]University of Chinese Academy of Sciences, Beijing, China

PP-29 **Gavrilova N.N.,** Myachina M.A., Ardashev D.V., Nazarov V.V., Skudin V.V.

SYNTHESIS OF MEMBRANE CATALYSTS BASED ON MESOPOROUS SUPPORT FOR DRY REFORMING OF METHANE

D. Mendeleyev University of Chemical Technology of Russia, Moscow, Russia

PP-30 Gonzalez-Rangulan V.V., **Reyero I.**, Moral A., Bimbela F., Gandia L.M.

ON THE DEVELOPMENT OF HIGHLY-ACTIVE Ni-BASED CATALYSTS FOR CO_2 METHANATION: EFFECTS OF THE SUPPORT AND ACTIVATION TEMPERATURE

Public University of Navarre, Pamplona, Spain

PP-31 **Gosiewski K.,** Pawlaczyk-Kurek A.

AERODYNAMIC CFD SIMULATIONS OF EXPERIMENTAL AND INDUSTRIAL THERMAL FLOW REVERSAL REACTORS

Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland

PP-32 **Guayaquil-Sosa J.F.[1],** Serrano B.[2], de Lasa H.[1]

PHOTOCATALTYTIC HYDROGEN PRODUCTION USING Pt-TiO_2 SEMICONDUCTORS: AN OXIDATION
REDUCTION NETWORK

[1]Western University, London, Canada
[2]Autonomous University of Zacatecas, Zacatecas, Mexico

PP-33 **Hardy B.,** Winckelmans G., De Wilde J.

A PENALIZATION METHOD FOR THE DIRECT NUMERICAL SIMULATION OF LOW-MACH REACTING GAS-SOLID FLOWS

Catholic University of Leuven (UCL), Louvain-la-Neuve, Belgium

PP-34 **Hirche D.,** Hinrichsen O.

NUMERICAL STUDY ON EFFECTS OF BUILT-IN IMPEDIMENTS IN AN ANAEROBIC FLUIDIZED BED MEMBRANE REACTOR FOR FOULING MITIGATION

Technical University of Munich, Munchen, Germany

PP-35 **Ibrasheva R.Kh.,** Yemelyanova V.S., Dossumova B.T., Shakiyev E.M., Baizhomartov B.B., Shakiyeva T.V.

MAGNETICALLY CONTROLLED OXIDATIVE CRACKING OF FUEL OIL TO PRODUCE LIGHT PETROLEUM PRODUCTS

"Scientific and Production Technical Center "Zhalyn" LLP, Almaty, Kazakhstan

PP-36 Ivanchina E.D.[1], Ivashkina E.N.[1], **Chuzlov V.A.[1],** Belinskaya N.S.[1], Dementyev A.Y.[2]

FORMATION OF THE COMPONENT COMPOSITION OF BLENDED HYDROCARBON FUELS AS THE PROBLEM OF THE MULTIOBJECT OPTIMIZATION

[1]National Research Tomsk Polytechnic University, Tomsk, Russia
[2]PJSC "KINEF", Tomsk, Russia

PP-37 **Klenov O.P.,** Noskov A.S.

INFLUENCE OF INPUT CONDITIONS ON A FLOW DISTRIBUTION IN TRICKLE BED REACTORS

Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia

PP-38 Knyazev D., Chernyshev D., Dubrovsky V., **Varlamova E.,** Makarov M., Kozlovsky R.

THE STUDIED OF ALTERNATIVE METHOD FOR PRODUCTION OF ACRYLIC ACID BY DEHYDRATION OF BUTYL LACTATE

D. Mendeleev University of Chemical Technology of Russia, Moscow, Russia

PP-39 Koci P., Boutikos P., Brezina J., Pecinka R., Hnatkova A., **Placha M.**

METAL OXIDES FORMATION ON Pt/Al_2O_3 and Pd/Al_2O_3 CATALYSTS AND ITS IMPACT ON NO OXIDATION

University of Chemistry and Technology, Prague, Czech Republic

PP-40 **Kondrasheva N.[1],** Rudko V.A.[1], Kondrashev D.O.[2]

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[1]St. Petersburg Mining University, St. Petersburg, Russia
[2]PJSC «Gazprom Neft», St.-Petersburg, Russia

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[1]Institute of Problems of Chemical Physics RAS, Chernogolovka, Moscow region, Russia
[2]Semenov Institute of Chemical Physics RAS, Moscow, Russia

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[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia
[2]Novosibirsk State University, Novosibirsk, Russia

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[1]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia
[2]Utocs LLC, Novosibirsk, Russia
[3]National Research Tomsk Polytechnic University, Tomsk, Russia

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[1]Peoples' Friendship University of Russia, Moscow, Russia
[2]A.V. Topchiev Institute of Petrochemical Synthesis RAS, Moscow, Russia
[3]Frumkin Institute of Physical Chemistry and Electrochemistry RAS, Moscow, Russia
[4]National Research Nuclear University "Moscow Engineering Physics Institute", Moscow, Russia

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[1]*National Research Tomsk Polytechnic University, Tomsk, Russia*
[2]*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*

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[1]*University of Cape Town, Cape Town, South Africa*
[2]*PetroSA Synthetic Fuels Innovation Centre (PFSIC), University of Western Cape, Bellville, South Africa*

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[1]*Sobolev Institute of Mathematics of SB RAS (Novosibirsk), Russia*
[2]*Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia*
[3]*Novosibirsk State University, Novosibirsk, Russia*
[4]*PJSC Gazprom Neft, St. Petersburg, Russia*

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[1]Ghent University, Ghent, Belgium

[2]Queensland University of Technology, Brisbane, Australia

[3]Karlsruhe Institute of Technology, Germany

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[1]Institute of Problems of Chemical Physics RAS, Chernogolovka, Moscow region, Russia

[2]Semenov Institute of Chemical Physics RAS, Moscow, Russia

[3]All-Russian Research Institute for Fire Protection, Balashiha, Moscow region, Russia

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[1]Mazandaran University of Science and Technology, Mazandaran, Iran

[2]Chemistry and Chemical Engineering Research Center of Iran, Tehran, Iran

[3]Tarbiat Modares University, Tehran, Iran

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[1]Public University of Navarre, Pamplona, Spain

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[1]Institute of Solid State Chemistry and Mechanochemistry, SB RAS, Novosibirsk, Russia

[2]Institute of Theoretical and Applied Mechanics SB RAS, Novosibirsk, Russia

[3]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia

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[2]*Institute for Problems of Chemical and Energetic Technologies of SB RAS, Biysk, Russia*

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

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[1]*Polytechnique de Montreal, Montreal, Canada*
[2]*Internship from "Universita degli studi di Milano" (Milan), Italy*

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[2]Universidade Nova de Lisboa, Caparica, Portugal
[3]REPSOL Polímeros, Sines, Portugal

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[1]Institute of Chemical Engineering, Polish Academy of Sciences, Gliwice, Poland
[2]Jagiellonian University, Kraków, Poland
[3]Opole University of Technology, Opole, Poland

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[1]Institute for Problems of Chemical and Energetic Technologies of SB RAS, Biisk, Russia
[2]Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia

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[1]Institute of Mechanics and Engineering, Kazan Scientific Center RAS, Kazan, Russia
[2]Kazan Federal University, Kazan, Russia
[3]Institute of Heat Power Engineering, Kazan State Power Engineering University, Kazan, Russia

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[1]Institute of Heat Power Engineering, Kazan State Power Engineering University, Kazan, Russia
[2]Kazan Federal University, Kazan, Russia
[3]Institute of Mechanics and Engineering, Kazan Scientific Center RAS, Kazan, Russia

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[1]Tver State Technical University, Tver, Russia
[2]Tver State University, Tver, Russia
[3]Federal Institute of Technology in Lausanne, Switzerland

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[1]Center for Scientific and Technical Research in Physico-Chemical Analysis, Tipaza, Algeria
[2]The University of Science and Technology–HOUARI BOUMEDIENE, Algiers, Algeria

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[1]Bursa Technical University, Bursa, Turkey
[2]Middle East Technical University, Ankara, Turkey

PP-96 **Uner D.[1],** Uner N.B.[2], Erkoc E.[2]
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[1]Middle East Technical University, Ankara, Turkey
[2]Bursa Technical University, Bursa, Turkey

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Nagoya University, Nagoya, Japan

National Institute of Technology, Toyota College, Japan

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Institute of Problems of Chemical Physics RAS, Chernogolovka, Moscow region, Russia

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[1]*Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China*

[2]*University of Chinese Academy of Sciences, Beijing, China*

[3]*University of Manchester, United Kingdom*

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D. Mendeleyev University of Chemical Technology of Russia, Moscow, Russia

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Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia

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[1]*Center of Physical and Chemical Methods of Research and Analysis, Almaty, Kazakhstan*
[2]*Institute of Combustion Problems, Almaty, Kazakhstan*

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[1]*Ufa State Petroleum Technological University, Ufa, Russia*
[2]*Institute of Petrochemistry and Catalysis RAS, Ufa, Russia*
[3]*Frumkin Institute of Physical Chemistry and Electrochemistry RAS, Moscow, Russia*

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[1]*D. Mendeleyev University of Chemical Technology of Russia, Moscow, Russia*
[2]*State Research Institute for Graphite-Based Structural Materials, Moscow, Russia*
[3]*JSC Tehmetall-2002, Kirovograd, Russia*

VP-8 **Tataurshchikov A.A.,** Krivtsova N.I., Ivanchina E.D.
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