

# *Eleventh International Symposium on Heterogeneous Catalysis*

*6–9 September 2015, Varna, Bulgaria  
Riviera Holiday Club*

*A satellite event of XII European Congress  
on Catalysis, Kazan, Russia*



*Programme*

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## Sunday, 6th September 2015

16.00–19.00 **Registration and information**

## Monday, 7th September 2015

08:00–18:00 **Registration and information**

09:00–09:15 **Opening ceremony**

09:15–10:00 **L1-Invited lecture:** The potential of bioethanol as a feedstock for energy and chemicals production  
S. Damyanova

10:00–10:45 **L2-Invited lecture:** Catalysts development for the production of liquid fuels by bio-oil upgrading. Hydrodeoxygenation of model molecules  
P. M. de Souza, R. C. Rabelo-Neto, L. E. P. Borges, G. Jacobs, B. H. Davis, D. E. Resasco, F. B. Noronha\*

10:45–11:15 **Coffee break**

11:15–12:00 **L3-Invited lecture:** Structural and support effects of ethanol reforming at low temperature over Pt catalysts  
X. Verykios

### Oral contributions

12:00–12:15 **O1:** Copper- or palladium-based catalysts for hydrogen production by low-temperature steam reforming of methanol?  
M. Greluk, W. Gac, G. Slowik\*, W. Zawadzki, G. Avgouropoulos, A. Machocki

12:15–12:30 **O2:** Production of green fuel components over heterogeneous porous catalytic materials: strategies to design catalytic active sites  
N. Kumar\*, J.-P. Mikkola, T. Riittonen, P. Mäki-Arvela, T. Salmi, D. Yu. Murzin

12:30–12:45 **O3:** Co-Al-Ce mixed oxide catalysts for VOCs total oxidation in micro- and semi-pilot scale  
J. Brunet, E. Genty, G. De Weireld, D. Thomas, A. Decroly, R. Cousin, S. Siffert\*

12:45–13:00 **O4:** Nickel-lanthanum catalysts for tri-reforming of methane  
K. Dossunov, G. Y. Yergazyieva, L. K. Myltykbayeva\*, N. A. Asanov, E. Zh. Ermeshev

13:00–13:15 **O5:** Catalytic decomposition of ozone: from laboratory fixed bed reactor to design of adiabatic monolithic reactor  
A. Naydenov

13:15–13:30 **O6:** Hydrogenation of carbon dioxide over Zr/Al and Zr/Si oxide catalysts

Sh. F. Tagiyeva\*,  
L. X. Qasimova,  
N. M. Aliyeva, E. H. Ismailov

13:30–14:00 **Lunch**

17:00–19:30 **Poster session**

**P1:** Synthesis and study of Co-Ni-Mo catalysts for hydroprocessing of oil fractions and solid fuel liquefaction products

M. Yunusov\*, S. Saidahmedov,  
S. Djalalova, K. Nasullaev, S. Gulyamov,  
N. Isaeva

**P2:** Latest developments in the synthesis of SAPO-34 catalysts used in methanol to olefins (MTO) process

R. B. Rostami\*, R. M. Behbahani,  
B. H. Shahraki, T. Hamule, M. Ghavipour

**P3:** Unconventional chemisorption-hydrolysis vs. impregnation technique for preparation of nanodispersed copper on mesoporous oxide catalysts

T. Tsoncheva, I. Genova\*, N. Scotti,  
V. Dal Santo

**P4:** Activated carbon from waste biomass as a catalyst support: formation of an active phase in copper and cobalt catalysts for methanol decomposition

T. Tsoncheva, I. Genova, I. Stoycheva,  
I. Spassova, R. Ivanova, B. Tsyntsarski,  
G. Issa\*, D. Kovacheva, N. Petrov

**P5:** Performance of a membrane catalytic reactor for partial methane oxidation using alumina-supported Ni-Cr<sub>2</sub>O<sub>3</sub> catalyst

A. E. Ushakov\*, A. A. Markov,  
M. V. Patrakeev, I. A. Leonidov,  
V. L. Kozhevnikov

**P6:** Characterization of Co/Al<sub>2</sub>O<sub>3</sub> catalyst used in steam reforming of ethanol

Z. Ferencz, K. Baán, R. Puskás, E. Varga,  
A. Oszkó, Z. Kónya, A. Erdöhelyi\*

**P7:** Preparation and characterization of catalysts based on polyvanadates of vanadium oxide deposited on titanium oxide

N. N. Yesmurzayeva\*, M. S. Markametova,  
B. S. Selenova, S. E. Kudaibergenov

**P8:** Effect of surface phosphorus addition on the catalytic properties of NiO in the oxidative dehydrogenation of ethane into ethylene

S.-B. Ivan\*, I. Popescu, V. I. Parvulescu,  
I.-C. Marcu

**P9:** Effect of alkaline promoters on the activity of CuMgAl mixed oxides derived from hydrotalcite-like compounds in NO<sub>x</sub> reduction by propene

R. Mrad, R. Cousin, N. A. Saliba, S. Siffert\*

**P10:** Effect of Ce on the total catalytic oxidation of toluene by mixed oxides derived from hydrotalcite

E. Genty, J. Brunet, S. Capelle, R. Cousin,  
S. Siffert\*

**P11:** VOC oxidation over MnO<sub>x</sub>-CeO<sub>2</sub> catalysts prepared by citrate and citrate-modified methods

S. Rahou, A. Djadoun\*, A. Benadda,  
A. Barama

- P12:** Conversion of bioethanol in the presence of zeolites
- P13:** Effect of transition metals (M = Fe, Co, Ni, Cu, Zn) on Au/CeO<sub>2</sub>-ZrO<sub>2</sub> catalysts used in partial methanol oxidation for hydrogen production
- P14:** WGS catalytic activity of alumina-supported copper-manganese catalysts: effect of Cu/Mn ratio and gold addition
- P15:** WGS catalytic activity of magnetite-type catalysts: Me<sub>0.5</sub>Fe<sub>2.5</sub>O<sub>4</sub> (Me = Cu<sup>2+</sup>, Co<sup>2+</sup>, Mn<sup>2+</sup>) supported on activated carbon
- P16:** Influence of Fe on Pd/Co<sub>3-x</sub>Fe<sub>x</sub>O<sub>4</sub> catalyst for methane oxidation in lean conditions
- P17:** Chemically modified  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>-supported cobalt catalyst for Fischer-Tropsch synthesis
- P18:** Alumina-supported Cu-Mn-Co catalysts for CO and VOCs oxidation
- P19:** CO-free hydrogen production via PROX over gold catalysts on Pr- and Y-doped ceria supports
- P20:** Catalytic cracking of propane over La/HZSM-5 catalysts: activity measurements and a kinetics study
- P21:** Gold-modified hydrotalcite Cu/ZnO/Al<sub>2</sub>O<sub>3</sub> catalysts for pure hydrogen production
- P22:** CO and VOCs oxidation over alumina-supported Cu-Mn catalysts: promotional role of gold or palladium
- P23:** Nanosized cobalt oxides modified with Pd for oxidation of methane and carbon monoxide
- P24:** Catalytic combustion of methane and *n*-hexane over a series of Co-Mn mixed oxides
- K. Dossunov, G. Y. Yergazyieva, L. K. Myltykbayeva\*, D. Kh. Churina, S. Tayrabekova
- S. F. Zaman\*, A. Al-Zahrani, B. Aibibula, Y. A. Alhamed, L. Petrov
- I. Ivanov\*, E. Kolentsova, K. Ivanov, P. Petrova, Y. Karakirova, G. Avdeev, T. Tabakova, V. Idakiev
- I. Ivanov\*, K. Zaharieva, Z. Cherkezova-Zheleva, B. Kunev, V. Idakiev, I. Mitov
- G. Ercolino\*, G. Grzybe, A. Grodzka, P. Stelmachowski, S. Specchia, A. Kotarba
- J.-S. Jung, J. S. Lee, G. H. Hong, S. O. Lee, K. H. Lee, E.-H. Yang, D. J. Moon\*
- E. Kolentsova\*, D. Dimitrov, V. Idakiev, T. Tabakova, K. Ivanov
- L. Ilieva\*, P. Petrova, G. Pantaleo, R. Zanella, L. F. Liotta, V. Georgiev, S. Boghosian, Z. Kaszukur, J. W. Sobczak, W. Lisowski, A. M. Venezia, T. Tabakova
- N. Rahimi\*, R. Karimzadeh
- J. L. Santos, T. R. Reina, I. Ivanov, S. Ivanova\*, T. Tabakova, M. A. Centeno, V. Idakiev, J. A. Odriozola
- T. Tabakova\*, E. Kolentsova, D. Dimitrov, K. Ivanov, P. Petrova, Y. Karakirova, M. Manzoli, A. M. Venezia, G. Avdeev
- S. Todorova\*, A. Ganguly, A. Naydenov, H. Kolev, I. Yordanova, S. Mondal, M. Shopska, G. Kadinov, S. Saha, A. K. Ganguli
- I. Yordanova\*, S. Todorova, H. Kolev, A. Naydenov, G. Ivanov

- P25:** Fischer-Tropsch synthesis in presence of composite materials based on pyrolyzed polymers of different structure  
D. G. Muratov\*, L. M. Zemtsov, G. P. Karpacheva, M. N. Efimov, M. I. Ivantsov, M. V. Kulikova, P. A. Chernavskii, E. L. Dzidziguri
- P26:** Redox properties of ceria-alumina  
R. Palcheva\*, B. Pawelec, E. Gaigneaux, J. L. Fierro, S. Damyanova
- P27:** Characterization of Ni/Al<sub>2</sub>O<sub>3</sub> and Ni/CeO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> catalysts  
R. Palcheva\*, B. Pawelec, Y. Karakirova, G. Tyuliev, E. Gaigneaux, J. L. Fierro, S. Damyanova
- P28:** EXAFS and XANES study of supported CoNi catalysts for ethanol steam reforming  
A. Braga, J. dos Santos, S. Damyanova\*, J. M. C. Bueno
- P29:** Reaction kinetics of glycerol steam reforming for renewable hydrogen production using Ni-based catalyst  
G. S. Go, H. J. Lee, D. J. Moon\*, N. C. Park, Y. C. Kim\*
- P30:** Effect of some rare earth metal oxide doping on the morphology, crystallite size, and N<sub>2</sub>O decomposition activity of CuO catalyst  
B. M. Abu-Zied\*, S. M. Bawaked, S. A. Kosa, W. Schwieger

20.00 **Welcome reception**

## Tuesday, 8th September 2015

08:00–18:00 **Registration and information**

- 09:00–09:45 **L4-Invited lecture:** Molecular level design of catalysed transformation of lignin to fuels  
J. A. Lercher
- 09:45–10:30 **L5-Invited lecture:** Low temperature hydrocarbon selective catalytic reduction of NO<sub>x</sub>  
C. E. Stere, W. Adress, R. Burch, S. Chansai, F. De Rosa, A. Goguet, W. G. Graham, C. Hardacre\*, V. Palma
- 10:30–11:00 **Coffee break**
- 11:00–11:45 **L6-Invited lecture:** Electrocatalysis: a key to transition to the renewable energy-based economy  
E. R. Savinova
- 11:45–12:05 **LCP-Company presentation:** The GenCell commercial product based on proprietary alkaline fuel cell technology  
N. Borchtchoukova

### Oral contributions

- 12:05–12:20 **O7:** Influence of B-site substitution on redox and catalytic properties of LaCoO<sub>3</sub> in NO oxidation  
J. Simböck, K. Simeonov\*, R. Palkovits

- 12:20–12:35 **O8:** Catalysts based on Pt-Ti modified mesoporous silicas for total oxidation of light hydrocarbons and CO  
M. Filip, S. Todorova, M. Shopska, C. Munteanu, V. Parvulescu\*
- 12:35–12:50 **O9:** Numerical analysis of phenomena in multi-tubular fixed bed reactor for Fischer-Tropsch synthesis and scale-up based on CFD simulation with ASF equations and estimated parameters from experiment  
H. Kim, J. Cho, D. Moon, D. Shin\*
- 12:50–13:05 **O10:** Polioxometalate/ionic liquids hybrids as a catalyst for the isomerisation of glucose to fructose in water  
C. Megías-Sayago, S. Ivanova\*, M. A. Centeno, J. A. Odriozola
- 13:05–13:20 **O11:** Synthesis and structural characterization of template-free ZSM-5 zeolite from rice husk ash  
R. Khoshbin, R. Karimzadeh\*
- 13:20–13:35 **O12:** Catalytic electrooxidation of cellulose on carbon electrodes modified by gold nanoparticles  
Y. Sugano\*, N. Kumar, M. Perula, J. Roine, A. Aho, J. Bobacka, A. Ivaska, J.-P. Mikkola\*
- 13:35–14:00 **Lunch**
- 17:00–19:30 **Poster session**
- P31:** Comparative analysis of the catalytic behaviour in CO oxidation of iron containing materials obtained by abiotic and biotic methods and after thermal treatment  
M. Shopska\*, S. Todorova, I. Yordanova, S. Mondal, G. Kadinov
- P32:** Effect of ruthenium addition and of the substitution of divalent cations on the catalytic performances towards CH<sub>4</sub> reforming by CO<sub>2</sub> of Co-Mg-Al mixed oxides prepared via hydrotalcite route  
C. Tanios, S. Bassil, M. Labaki, H. L. Tidahy, C. Gennequin\*, A. Aboukaïs, B. Nsouli, E. Abi-Aad
- P33:** Hydrogen production by dry reforming of methane over lanthanum-promoted nickel-based catalysts prepared via hydrotalcite route  
E. Dahdah, J. A. Rached, S. Aouad, H. L. Tidahy, C. Gennequin\*, A. Aboukaïs, E. Abi-Aad
- P34:** Performance of Ni/SiO<sub>2</sub> catalysts for edible vegetable oil hydrogenation  
J. Krstić, M. Gabrovska\*, D. Lončarević, D. Nikolova, V. Radonjić, M. Stanković, L. Bilyarska, D. Jovanović
- P35:** Purification of hydrogen-rich streams from CO<sub>2</sub> by methanation  
M. Gabrovska\*, R. Edreva-Kardjiev, M. Shopska, D. Nikolova, L. Bilyarska, D. Crişan, M. Crişan
- P36:** Non-platinum Ni-based anode catalyst for fuel cells  
M. Gabrovska\*, N. Borchtchoukova, D. Nikolova, V. Feldman, L. Bilyarska, S. Rakovsky, G. Finkelshtain

- P37:** Influence of mechanochemical activation and metal doping of ZnO on the photocatalytic activity in degradation of Malachite Green dye  
K. Milenova\*, K. Zaharieva, A. Eliyas, I. Avramova, Y. Karakirova, I. Stambolova, V. Blaskov, Z. Cherkezova-Zheleva, B. Kunev, S. Rakovsky
- P38:** Mixed cobalt-copper ferrite-type of materials: synthesis and photocatalytic efficiency in the degradation of Reactive Black 5 dye under UV-illumination  
K. Zaharieva\*, K. Milenova, Z. Cherkezova-Zheleva, A. Eliyas, V. Rives, M. Tsvetkov, R. Trujillano, B. Kunev, I. Mitov
- P39:** Alkylation of benzene by propane over Ni-ReOx/Al<sub>2</sub>O<sub>3</sub>+HZSM-5 catalyst  
S. I. Abasov, Y. S. Isayeva, D. B. Tagiyev, N. M. Aliyeva, E. H. Ismailov\*
- P40:** Photocatalytic properties of ferrite/activated carbon composites for degradation of aqueous Malachite Green dye  
K. Zaharieva, K. Milenova, Z. Cherkezova-Zheleva\*, A. Eliyas, B. Kunev, I. Mitov
- P41:** Cancelled
- P42:** Preparation of ZnO photocatalysts by Pluronic-assisted hydrothermal process  
A. Eliyas\*, I. Stambolova, V. Blaskov, D. Stoyanova, K. Milenova, L. Dimitrov, M. Shipochka
- P43:** Promoting the oxidative removal rate of oxalic acid on gold-doped CeO<sub>2</sub>/TiO<sub>2</sub> photocatalysts under UV and visible light irradiation  
D. Tomova\*, V. Iliev, A. Eliyas, S. Rakovsky, G. Li Puma
- P44:** Photocatalytic oxidation of 2,4,6-trinitrotoluene in aqueous solution catalysed by gold- or platinum-modified N-doped WO<sub>3</sub>/TiO<sub>2</sub> semiconductor  
V. Iliev\*, D. Tomova, S. Rakovsky, M. Daous, L. Petrov
- P45:** Enhancement of the activity of TiO<sub>2</sub>-based photocatalysts  
V. Iliev\*, D. Tomova, A. Eliyas, S. Rakovsky, M. Anachkov
- P46:** CdS/TiO<sub>2</sub> nanocomposite photocatalytic activity in the reaction of ethylene complete oxidation under visible light  
N. G. Kostova\*, E. Dutková, A. Eliyas, M. Shopska, E. Stoyanova-Eliyas, M. Fabián, P. Baláz
- P47:** Functionalized mesoporous silica nanoparticles as efficient supports for enzymes immobilization  
M. Filip\*, M. Ciobanu, M. Mureseanu, D. Culita, C. Munteanu, G. Paun, V. Parvulescu
- P48:** Continuous-flow enantioselective aldol additions over immobilized oligopeptides  
A. Gurka\*, G. Szöllösi, M. Bartók
- P49:** Effect of silica-carbon composite support on the activity of cobalt catalysts in NO reduction with CO  
N. Stoeva\*, I. Spassova, R. Nickolov, G. Atanasova, M. Khristova
- P50:** Catalytic activity of perlite-supported silver catalyst in the reaction of ozone decomposition  
V. Georgiev\*, V. Blaskov, I. Stambolova, T. Batakliiev, A. Eliyas, M. Anachkov



- P51:** Ozone decomposition over nickel and silver catalysts supported on carbon  
T. Batakliiev\*, V. Georgiev,  
P. Karakashkova, M. Anachkov,  
S. Rakovsky
- P52:** Activation and catalysis of cobalt complexes for hydrolysis of sodium borohydride  
H. Inokawa\*, Y. Alhamed, A. Al-Zahrani,  
L. Petrov
- P53:** Synthesis and study of some novel chelating photochromic spironaphthoxazines  
S. Minkovska\*, S. Rakovsky, B. Jeliaskova,  
T. Deligeorgiev
- P54:** Photocatalytic bleaching of two organic dyes catalysed by La-doped nanosized TiO<sub>2</sub>  
A. Stoyanova\*, Ts. Krumova,  
A. Bachvarova-Nedelcheva, R. Iordanova
- P55:** Investigation of the efficiency of the classical type of catalysts for HDS using TPR and TPS  
I. Shtereva, D. Vladov\*, S. Rakovsky,  
B. Iliencko
- P56:** Preparation of Fe-Pd/Al-Si-O catalyst using biogenic iron of cultivated *Leptothrix* genus bacteria  
M. Shopska, G. Kadinov, J. Briancin,  
I. Yordanova, H. Kolev\*, M. Fabian
- P57:** Influence of B-site substitution on redox and catalytic properties of LaCoO<sub>3</sub> in NO oxidation  
J. Simböck, K. Simeonov\*, R. Palkovits
- P58:** Catalytic wet peroxide oxidation of tyrosol over transition metal bearing Beta zeolite catalysts: influence of metal cation species and acidity  
K. M. Valkaj, N. Kumar\*, K. Eränen,  
N. Gemo, J. Roine, V. Tomašić,  
D. Yu. Murzin
- P59:** A convenient method for one-pot synthesis of β-acetamido ketones using nano-alumina sulphuric acid (nano-asa) reusable catalyst  
A. Gharib\*, N. N. Pesyan, L. V. Fard,  
M. Roshani
- P60:** Synthesis of bis-2,3-dihydroquinazolin-4(1*H*)-ones and 2,3-dihydroquinazolin-4(1*H*)-ones derivatives by silica-supported Preyssler nanoparticles  
A. Gharib\*, M. Jahangir, M. Roshani,  
J. W. Scheeren
- P61:** ZnO nanoparticles as catalyst for efficient green synthesis of antiplatelet drug (clopidogrel)  
A. Gharib\*, N. N. Pesyan, L. V. Fard,  
M. Roshani
- P62:** Nanostructured multicomponent titania doped with copper, cobalt, and niobium catalysts for total oxidation of ethyl acetate  
T. Tsoncheva\*, J. Henych, R. Ivanova,  
D. Kovacheva, V. Štengl
- P63:** Hydrogen production by ammonia decomposition using high surface area Mo<sub>2</sub>N and Co<sub>3</sub>Mo<sub>3</sub>N catalysts  
S. Podila, S. F. Zaman\*, H. Driss,  
Y. A. Alhamed, A. A. Al-Zahrani,  
L. A. Petrov

**P64:** Mixed alcohols synthesis from syngas over Mo<sub>2</sub>N supported on activated carbon

S. F. Zaman\*, N. Pasupulety, Y. A. Alhamed, M. A. Daous, A. A. Al-Zahrani, K. J. Smith, L. A. Petrov

### Wednesday, 9th September 2015

08:00–14:00 **Registration and information**

09:00–09:45 **L7-Invited lecture:** Methane partial oxidation over Ni-based catalysts: synthesis and support effects  
A. M. Venezia

09:45–10:30 **L8-Invited lecture:** Structured and microstructured catalytic reactors for hydrogen cleanup  
J. A. Odriozola

10:30–11:00 **Coffee break**

11:00–11:45 **L9-Invited lecture:** Microreactor technology in catalytic preparation of chemical intermediates  
T. Salmi

11:45–12:30 **L10-Invited lecture:** Photocatalytic materials for environmental applications  
A. Eliyas\*, V. Iliev, L. Petrov, S. Rakovsky

12:30–12:45 **Closing ceremony**

12:45–13:30 **Lunch**

## Notes

**EISHC XI**

BULGARIA 2015

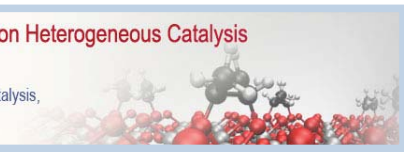


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6 – 9 September 2015, Varna, Bulgaria

A satellite event of XII European Congress on Catalysis,

30 August – 4 September 2015, Kazan, Russia



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