Twelfth International Congress on Catalysis and Automotive Pollution Control

APoC12

Brussels, August 2022

Second Circular Programme

August 29th – 31st, 2022

Brussels, Belgium

UNIVERSITÉ LIBRE DE BRUXELLES ULB

Registration

Registration and accommodation arrangements should be made online:

https://capoc.ulb.ac.be/shop/

The registration fee includes:

- Monday reception at the Royal Belgian Institute of Natural Sciences
- Morning and afternoon coffee breaks
- Lunches
- Book of preprints (if ticked during the registration process. Books will be distributed at the beginning of the symposium)
- Students may register at a reduced fee
- **Accompanying persons** not participating in the scientific sessions are **free of charge but must take contact with the congress secretariat to register**.

Proceedings

The proceedings of CAPoC12 will appear as a special issue of the journal "Topics in Catalysis". All accepted papers will be published with no distinction between oral and poster form.

Hotel accommodation

Is being handled by "Visit Brussels". Rooms have been reserved in several hotels in the center of Brussels.

Accommodation can only be guaranteed to those participants who have filled in the registration form on the following URL:

https://secure.hotel.visitbrussels.be/event/capoc12/congress/search

Venue

The congress will be held at the "Institut de Sociologie – Salle Dupréel"; Av. Jeanne 44 – 1050 Brussels (on the University "Campus Solbosch")

(see map ULB Campus Solbosch – at the end of this booklet)

There is frequent public transport service (bus 71, tramways 8 or 25) between campus and city center. Large multilevel parking facilities are available next to the "Institut de Sociologie" (please contact the congress manager to ensure your parking place)

Arrival

The registration desk will be open on Sunday August 28th, from 4:00 PM to 7:00 PM (Brussels time : UTC +2), and during the congress starting on Monday August 29th at 08:00 AM.

Language

Presentations, discussions and proceedings will be exclusively in English

Social Program

- **Monday, August 29th**

A free of charge reception will be held in the evening at the Royal Belgian Institute of Natural Sciences for all participants and registered accompanying persons.

- **Tuesday, August 30th**

The symposium dinner will take place in the evening at the Hotel Le Plaza. The cost is of 80 Euro per head. Payment should be received with the registration fee.

Enquiries

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Our partners

MONDAY August 29th

Introductory session – part 1

8h00	**Opening of the registration desk**
8h50	**Welcome address** *Marius Gilbert* ULB Vice-Rector for Research and Valorisation *Zakia Khattabi* Federal Minister of the Climate, the Environment, Sustainable Development and Green Deal
9h10 *L1*	**Global Powertrain Trends in the Race Toward Zero** *Dr. Kelly Senecal* Convergent Science, USA
9h50 *L2*	**Fleet & Fuels pathways for a carbon neutral road transport in Europe by 2050: a review of possible options** *Roland Dauphin* Concawe, Brussels, Belgium
10h30	Coffee break **– Poster session – General overview**

ORAL SESSIONS

Session 1: Emission control from Diesel engines

11h10 *K1a*	**First-principles-based insights on the selectivity in NH_3-SCR over Cu-CHA** *Y. Feng[1], X. Wang[1], T.V.W. Janssens[2], P.N.R. Vennestrøm[2], J. Jansson[3], M. Skoglundh[1] and H. Grönbeck[1]* [1] Competence Centre for Catalysis, Chalmers University of Technology, SE-41296 [2] Umicore Denmark ApS, DK-2970 Hørsholm, Denmark [3] Volvo Group Trucks Technology, SE-405 08 Göteborg, Sweden
11h40 *O1.01*	**1BPd/zeolite-based trap materials – agglomeration of Pd as a degradation mode** *R. Zelinsky[1], Y. Gu[1], J.A. Pihl[2], W. S. Epling[1] and M. Harold[3]* *[1] University of Virginia, Charlottesville, VA, USA 22904* *[2] Oak Ridge National Laboratory, Oak Ridge, TN, USA 37830* *[3] University of Houston, Houston TX, USA 77204*

12h00 **Model based optimization of SCR catalyst systems with a twin-dosing ammonia strategy**

O1.02 *S. Chen[1], R. Uglietti[1], S. Hartl[1], M. Bendrich[1], B. Betz[1], A. Scheuer[1] and M. Votsmeier[1,2]*

[1] Umicore AG & Co. KG, Rodenbacher Chaussee 4, 63457 Hanau, Germany

[2] Technische Universität Darmstadt, Alarich-Weiss-Straße 8, 64287 Darmstadt, Germany

12h20 **Lunch – Poster session**

14h00 **Spatially resolved gas phase profiling of simultaneous isocyanic acid hydrolysis and reduction of nitrogen oxides over SCR catalysts**

O1.03 *M. Eck[1], I. Scherbej[1,2], P. Lott[1], M. Börnhorst[1] and O. Deutschmann[1,2]*

[1] Institute for Chemical Technology and Polymer Chemistry, Karlsruhe Institute of Technology (KIT), Engesserstraße 20, 76131 Karlsruhe, Germany

[2] Institute for Catalysis Research and Technology, Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany

14h20 **Pd-doped zeolites for low-T NO_x adsorption: an operando FT-IR spectroscopy study**

O1.04 *L. Castoldi[1], R. Matarrese[1], L. Lietti[1], Y. Hamid[1] and S. Morandi[2]*

[1] Laboratory of Catalysis and Catalytic Processes, Dipartimento di Energia, Politecnico di Milano, Via La Masa 34, Milano, Italy

[2] Dipartimento di Chimica and NIS, Inter-departmental Center of Excellence, Università di Torino, Via P. Giuria 7, 10125 Torino, Italy

14h40 **Visualizing chemical gradients in a Cu-SSZ-13-washcoated honeycomb catalyst during NH_3-SCR**

O1.05 *D. E. Doronkin[1], J. Becher[1], J.-D. Grunwaldt[1] and T. L. Sheppard[1]*

[1] Karlsruhe Institute of Technology, Karlsruhe, 76131 Germany

15h00 **Promoted oxygen activation over ammonia solvated copper species: a key-step in low-temperature SCR over Cu-chabazite**

O1.06 *X. Wang[1], L. Chen[1], P. N. R. Vennestrøm[2], T. V. W. Janssens[2], J. Jansson[3], H. Grönbeck[1] and M. Skoglundh[1]*

[1] Chalmers University of Technology, Gothenburg, 412 96 Sweden

[2] Umicore Denmark ApS, Hørsholm, 2970 Denmark

[3] Volvo Group Trucks Technology, Gothenburg, 405 08 Sweden

15h20 **In Situ DRIFTS studies on N_2O formation over Cu-functionalized zeolites during ammonia-SCR: effect of various NO/NO_2 Ratio**

O1.07 *G. Isapour[1], A. Wang[2], J. Han[2], D. Creaser[2], L. Olsson[2], M. Skoglundh[1] and H. Härelind[1]*

Chalmers University of Technology, Department of Chemistry and Chemical Engineering

[1] Division of Applied Chemistry, Competence Centre for Catalysis, Göteborg, SE-412 96 Sweden

[2] Division of Chemical Engineering, Competence Centre for Catalysis, Göteborg, SE-412 96 Sweden

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15h40 **Coffee Break – Poster session**

16h20 **Spatiotemporal features of NO and hydrocarbons trapping and conversion in a PNA+HCT+OC sequential monolith configuration**

K1b *A. Gupta[1] and M.P. Harold[1]*

[1] University of Houston, Houston, Texas, 77204, USA.

16h50 **Understanding the aging phenomena of Diesel oxidation catalysts**

O1.08 *M. Agote-Arán[1], M. Elsener[1], F. W. Schütze[2], C. M. Schilling[2], M. Sridhar[3], E. Katsaounis[3], O. Kröcher[1,4] and D. Ferri[1]*

[1] Paul Scherrer Institut, 5232 Villigen, Switzerland

[2] Umicore AG & Co. KG, D-63457 Hanau-Wolfgang, Germany

[3] FPT Motorenforschung AG, CH-9320 Arbon, Switzerland

[4] École polytechnique fédérale de Lausanne (EPFL), Institute for Chemical Sciences and Engineering, 1015 Lausanne, Switzerland

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17h10 **CO oxidation to probe Cu dimers in Cu-CHA catalysts: the impact of NH_3 loading**

O1.09 *U. Iacobone[1], R. Villamaina[2], I. Nova[1], E. Tronconi[1], M.P. Ruggeri[2], J. Collier[2] and D. Thompsett[2]*

[1] Laboratory of Catalysis and Catalytic Processes, Politecnico di Milano, 20156 Milan (Italy)
[2] Johnson Matthey Technology Centre, Sonning Common, Reading RG4 9NH (UK)

17h30 **A Heated AdBlue / DEF Mixer for High Efficiency NO_x Reduction in Low Temperature Drive Cycles, RDE and City Driving**

O1.10 *M. Masoudi[1], N. Poliakov[1], S. Noorfeshan[1], J. Hensel[1] and E. Tegeler[1]*

[1] Emissol LLC, Mill Creek, Washington, USA

18h00 **Departure by bus to the reception**

19h00 **Reception at the Royal Belgian Institute of Natural Sciences**

museum NATURALSCIENCES.BE

TUESDAY August 30th

Introductory session – part 2

9h00 **Euro 7 emission standard proposal and its effects on future after-treatment technology**

L3 *Panagiota Dilara*

European Commission, DG GROW, Mobility Unit, Brussels, Belgium

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9h40 **Renewable Fuels as necessary component for a GHG-neutral mobility**

L4 *Olaf Toedter*

Karlsruher Institut für Technologie (KIT), Germany

10h20 **Coffee Break – Poster session**

Session 2 : Emission control from gasoline engines

11h00 **Evaluating different strategies to minimize cold-start emissions from gasoline engines**

K2 *S. Nandi[1], C. Chaillou[2], E. Laigle[2], A. Nicolle[2], C. Norsic[3], P. Granger[1], C. Dujardin[1] and M. Richard[1]*

[1] Univ. Lille, CNRS, Centrale Lille, Univ. Artois, UMR 8181 – UCCS – Unité de Catalyse et Chimie du Solide, F-59000 Lille, France

[2] Aramco Fuel Research Center, 232 Avenue Napoleon Bonaparte, 92852 Rueil-Malmaison, France

[3] EMC France, 4 Allée de la rhubarbe, Achères, 78260, France

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11h30 **Comparison of Fe- and Mn-based perovskites prepared by industrially relevant synthetic methods: effect of synthesis on reactivity in three-way catalysis**

O2.01 *E. Brusamarello[1], A. Osti[1], C. Blonda[2], C. Salazar Castro[3], A. E. Pascui[4], P. Canu[2] and A. Glisenti[1]*

[1] Dept. of Chemical Sciences, University of Padova, Padova 35133 – Italy

[2] Dept. of Industrial Engineering, University of Padova, Padova 35133 - Italy

[3] Lurederra Foundation, Lor Arcos 31210 – Spain

[4] Johnson Matthey, Sonning Common RG4 9NH – United Kingdom

O2.02 *Withdrawn presentation*

11h50 **Structural dynamics of highly dispersed Pt single sites supported on CeO_2 for oxidation reactions**

O2.03

P. Dolcet[1], F. Maurer[1], M. Casapu[1] and J.-D Grunwaldt[1,2]

[1] Institute for Chemical Technology and Polymer Chemistry (ITCP), Karlsruhe Institute of Technology (KIT), Engesserstrasse 20, Karlsruhe, 76131, Germany

[2] Institute of Catalysis Research and Technology (IKFT), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, Eggenstein-Leopoldshafen, 76344, Germany

12h10 **Lunch – Poster session**

14h00 **Internal transport limitations in catalytic filters for exhaust gas aftertreatment**

O2.04

M.Blažek[1], R. Pečinka[1], J. Němec[1], P. Kočí [1], M. Svoboda[2] and A. York[3]

[1] University of Chemistry and Technology, Prague, Department of Chemical Engineering, Technická 5, Prague 166 28, Czech Republic

[2] University of West Bohemia, New Technologies Research Centre, Univerzitní 8, Pilsen 306 14, Czech Republic

[3] Johnson Matthey Technology Centre, Blounts Court Road, Sonning Common, Reading RG4 9NH, United Kingdom

14h20 **An isotopic study on oxygen interaction over ceria-praseodymia mixed oxides with pulse experiments using $^{18}O_2$. Implications on catalysed soot combustion activities in the GDI context**

O2.05

J.C. Martínez-Munuera[1], M. Cortés-Reyes[2] and A. García-García[1]

[1] MCMA Group, Department of Inorganic Chemistry and Institute of Materials, University of Alicante, Carretera de Sant Vicent del Raspeig s/n, 03690 Sant Vicent del Raspeig, Alicante, Spain

[2] Department of Chemical Engineering, Faculty of Sciences, Campus de Teatinos, University of Málaga, Málaga E-29071, Spain.

14h40 **High PN-FE with on-wall coated gasoline particulate filter catalyst**

O2.06

H. Kurihara[1], S. Akita[1], Y. Nagai[1], R. Myochi[1], K. Horii[1], N. Munakata[1], T. Ueda[1] and T. Wakabayashi[1]

[1] Mitsui Mining & Smelting Co., Ltd., Ageoshimo 1013-1, Ageo, 362-0025, Japan

Session 3 : Emission control from de-fossilized fuels-powered engines

15h00 — **Exhaust aftertreatment of vehicles operated with the synthetic Diesel fuel OME: A perspective**

K3a

D. Eisenbeil[1,2], P. Demel[1], M. Haas[1,2], H. Hamel[1], A. Dreizler[1], C. Beidl[1] and M. Votsmeier[1,2]

[1] Technische Universität Darmstadt, Alarich-Weiss-Straße 8, 64287 Darmstadt, Germany

[2] Umicore AG & Co. KG, Rodenbacher Chaussee 4, 63457 Hanau, Germany

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15h30 — **CH_4 and CH_2O oxidation in gas engine exhaust on Fe-based catalysts**

O3.01

M. Mehne[1] and S. Kureti[1]

[1] TU Freiberg, Chair of Reaction Engineering, German

15h50 — **Coffee Break – Poster Session**

16h20 — **HCN production from formaldehyde during the selective catalytic reduction of NO_x with NH_3 over V_2O_5/WO_3-TiO_2**

O3.02

R.J.G. Nuguid[1,2], M. Elsener[1], O. Kröcher[1,2] and D. Ferri[1]

[1] Paul Scherrer Institut, Forschungsstrasse 111, CH-5232 Villigen PSI (Switzerland)

[2] École polytechnique fédérale de Lausanne (EPFL), Institute for Chemical Sciences and Engineering, CH-1015 Lausanne (Switzerland)

16h50 — **Regenerating of NO_x storage catalysts with hydrogen from hydrogen internal combustion engines**

O3.03

S. Walter[1], G. Hagen[1], D. Koch[2], A. Geißelmann[3] and R. Moos[1]

[1] Department for Functional Materials, University of Bayreuth, 95440 Bayreuth, Germany

[2] Keyou GmbH, 80335 München, Germany

[3] Umicore AG & Co. KG, 63457 Hanau-Wolfgang, Germany

17h10 **Formation of toxic HCN during NH_3-SCR of alternative fuel engines**

O3.04 *S. Barth[1,2], D. Zengel[2], M. Casapu[2] and J.-D. Grunwaldt[1,2]*

[1] Institute of Catalysis Research and Technology, Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen, 76344, Germany

[2] Institute for Chemical Technology and Polymer Chemistry, Karlsruhe Institute of Technology (KIT), Karlsruhe, 76131, Germany

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20h00 **Symposium dinner at the *Hotel le Plaza***

Address : Boulevard Adolphe Max 118-124, 1000 Bruxelles

WEDNESDAY August 31st

ORAL SESSIONS

Session 3: Emission control on de-fossilized fuels-powered engines

9h00 **Benefits of periodic operation of Pd/Al_2O_3 for CH_4 oxidation - from lean burn applications to three way catalysis**

K3b *M. Roger[1, 2], T. Franken[1], M. Agote-Arán[1], O. Kröcher[1,2] and D. Ferri[1]*

[1] Paul Scherrer Institut, Forschungsstrasse 111, CH-5232 Villigen PSI (Switzerland)

[2] École polytechnique fédérale de Lausanne (EPFL), Institute for Chemical Sciences and Engineering, CH-1015 Lausanne (Switzerland)

9h30 **Selective catalytic reduction with hydrogen for exhaust gas after-treatment of hydrogen combustion engines**

O3.05 *M. Borchers[1], K. Keller[1], P. Lott[1] and O. Deutschmann[1]*

[1] Karlsruhe Institute of Technology, Karlsruhe, 76131 Germany

Session 4 : Technological innovations

9h50 **Low-temperature NO_x reduction by H_2 in real diesel exhaust gas**

O4.01 *E. Esser[1] and S. Kureti[1]*

[1] TU Freiberg, Institute of Energy Process and Chemical Engineering, Chair of Reaction Engineering, Freiberg, Germany

10h10 **Reducing cold-start-emissions by microwave-based catalyst heating: simulative studies**

O4.02 *V. Malashchuk[1], S. Walter[1], G. Hagen[1], M. Engler[2], G. Link[2], J. Jelonnek[2], F. Raß[3] and R. Moos[1]*

[1] Department for Functional Materials, University of Bayreuth, 95440 Bayreuth, Germany

[2] Karlsruhe Institute of Technology, IHM, 76344 Eggenstein-Leopoldshafen, Germany

[3] Honda R&D Europe (Deutschland) GmbH, 63073 Offenbach am Main, Germany

10h30 **Coffee Break – Poster Session**

11h00	**Probing the oxide formation on Pt, Pd and Pt/Pd catalysts during NO oxidation by Atom Probe Tomography (APT)**
O4.03	*YH. Lee[1], D. Dobesch[2], U. Tuttlies[2], P. Stender[1], G. Schmitz[1] and U. Nieken[2]* [1] Institute of Materials Science, University of Stuttgart, Heisenbergstr. 3, 70569 Stuttgart, Germany [2] Institute of Chemical Process Engineering, University of Stuttgart, Böblinger Str. 78, 70199 Stuttgart, Germany
11h20	**Opportunities and challenges of pre-turbine catalyst application**
O4.04	*D. Zengel[1], S. Barth[2], M. Casapu[1], O. Deutschmann[1] and J.-D. Grunwaldt[1,2]* [1] Southwest Research Institute, San Antonio, Texas, 78253 USA[1]Institute for Chemical Technology and Polymer Chemistry, Karlsruhe Institute of Technology (KIT), Karlsruhe, 76131, Germany [2] Institute of Catalysis Research and Technology, Karlsruhe Institute of Technology (KIT), Eggenstein-Leopoldshafen, 76344, Germany
11h40	**Discussions - outlook**
12h10	**Concluding remarks**
12h20	**End of the Symposium – Lunch**

POSTER SESSIONS

Posters will be exposed during the entire duration of the congress

Session 1 : Emission control from Diesel engines

P1.01 **NO_x reduction by H_2 on Mo-promoted Pt/ZrO_2 catalysts in lean exhaust gases**

A. D. Schröder[1] and S. Kureti[1]
[1] TU Freiberg, Chair of Reaction Engineering, Germany

P1.02 **Aging of Pt/Al_2O_3 Diesel oxidation catalyst: hydrothermal vs chemical effects**

M. Agote-Arán,[1] C. Coffano,[2] L. Lietti[2] and D. Ferri
[1] Paul Scherrer Institut, Villigen 5232, Switzerland
[2] Politecnico di Milano, Milano 20133, Italy

P1.03 **Effect of an Al_2O_3-based binder on the structure and activity of extruded Fe ZSM 5**

F. Buttignol[1,2], A. Garbujo[3], P. Biasi[3], D. Rentsch[4], O. Kröcher[1,2] and D. Ferri[1]
[1] Paul Scherrer Institut, Villigen, 5232 (Switzerland)
[2] EPFL, Institute for Chemical Sciences and Engineering, Lausanne, 1500 (Switzerland)
[3] Basic Research Department, Casale SA, Lugano, 6900 (Switzerland)
[4] Laboratory for Functional Polymers, Swiss Federal Laboratories for Materials Science and Technology, Empa, Dübendorf, 8600 *(Switzerland)*

P1.04 **Aging characteristics of zeolite based catalysts for nitrous oxide abatement in simulated feeds of nitric acid plant**

F. Buttignol[1,4], A. Garbujo[2], R. Lanza[3], P. Biasi [2], O. Kröcher[1,4] and D. Ferri[1]
[1] Paul Scherrer Institut, Villigen, 5232 (Switzerland)
[2] Basic Research Department, Casale SA, Lugano, 6900 (Switzerland)
[3] Verdant, KTH Royal Institute of Technology, Stockholm, 114 28 (Sweden)
[4] EPFL, Institute for Chemical Sciences and Engineering, Lausanne, 1500 (Switzerland)

P1.05 **Stability and reactivity of a polyoxymethylene dimethyl ether over typical catalysts of Diesel emission control**

M. Elsener[1], D. Ferri[1], E. Jacob[2] and O. Kröcher[1,3]

[1] Paul Scherrer Institut, Forschungsstrasse 111, Villigen, 5232 Switzerland

[2] Emissionskonzepte Motoren, Bodman-Ludwigshafen, 82152 Germany

[3] École polytechnique fédérale de Lausanne (EPFL), Institute for Chemical Sciences and Engineering, Lausanne, 1015 Switzerland

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P1.06 **HCN production over selective catalytic reduction catalysts from reaction of formaldehyde and NH_3**

M. Elsener[1], R.J.G. Nuguid[1,2], O. Kröcher[1,2] and D. Ferri[1]

[1] Paul Scherrer Institut, Forschungsstrasse 111, Villigen, 5232 Switzerland

[2] École polytechnique fédérale de Lausanne (EPFL), Institute for Chemical Sciences and Engineering, Lausanne, 1015 Switzerland

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P1.07 **Hydrothermal stability studies of novel hierarchical-CHA catalysts**

B. R. S. De Araujo[1], P. Rocher[1], G. Pétaud[1], A. Caravaca[1] and S. Gil[1]

[1] Université Claude Bernard Lyon 1, CNRS, IRCELYON, Villeurbanne, F-69622, France

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P1.08 **NH_3-SCR transient redox behavior: effect of O_2 feed content variation over Cu-CHA**

N. D. Nasello[1], F. Gramigni[1], I. Nova[1], E. Tronconi[1], S. Dieterich[2], F. Hofmann[2] and M. Weibel[2]

[1] Politecnico di Milano, Milano, Via La Masa 34, I-20156, Italy

[2] Mercedes-Benz AG, Stuttgart, 019-C654 RD/PPD, *70546, Germany*

P1.09 **NH_3-SCR reaction pathways over (W or Nb) / ceria-zirconia: influence of the partial substitution of zirconium for praseodymium**

R. Pointecouteau[1,2], C. Croisé[1], J. Akil[1], A. Demourgues[2], N. Bion[1], X. Courtois[1] and F. Can[1]

[1] Institut de Chimie des Milieux et Matériaux de Poitiers (IC2MP), Université de Poitiers, CNRS, UMR 7285, 4 Rue Michel Brunet, TSA 51106, F-86073 Poitiers 9, France

[2] Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), Université de Bordeaux, Bordeaux INP, CNRS, UMR 5026, 87 Avenue du Dr Albert Schweitzer, 33600 Pessac, France

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P1.10 **FIB-SEM based simulation of pore scale diffusion in SCR catalyst layers**

J. Proff[1,2], M. Mail[3], A. Scheuer[2], M. Bendrich[2], E. Quinet[2], A. Schuler[2], T. Scherer[3], C. Kübel[1,3] and M. Votsmeier[1,2]

[1] Technical University Darmstadt, Darmstadt,64287 Germany

[2] Umicore AG & Co. KG, Hanau-Wolfgang, 63457 Germany

[3] Karlsruhe Nano Micro Facility (KNMF) and Institute of Nanotechnology (INT), Karlsruhe Institute of Technology (KIT), 76344 Eggenstein-Leopoldshafen, Germany;

P1.11 **Unraveling real soot removal mechanism over DPNR Pt-Ba-K/Al_2O_3 catalyst**

M. Cortés-Reyes[1], J.C. Martínez-Munuera[2], C. Herrera[1], M.A. Larrubia[1], A. García-García[2] and L.J. Alemany[1]

[1] Departamento de Ingeniería Química, Facultad de Ciencias, Campus de Teatinos, Universidad de Málaga, Málaga, E-29071, Spain

[2] MCMA Group, Department of Inorganic Chemistry and Institute of Materials, University of Alicante, Carretera de Sant Vicent del Raspeig, s/n, 03690, Sant Vicent del Raspeig, Alicante, Spain

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P1.12 **Operando QEXAFS study of diesel exhaust ammonia slip catalysts during realistic driving cycles**

V. Marchuk[1], D. E. Doronkin[2] and J.-D. Grunwaldt[1,2]

[1] Institute for Chemical Technology and Polymer Chemistry, Karlsruhe, 76131, Germany

[2] Institute of Catalysis Research and Technology, Eggenstein-Leopoldshafen, 76344, Germany

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P1.13 **$BaFe_{1-x}Ni_xO_3$ catalysts for NO_x-assisted diesel soot oxidation**

S. Montilla Verdú[1], V. Torregrosa Rivero[1], Á. Díaz Verde[1] and M. J. Illán Gómez[1]

[1] Carbon Materials and Environment Research Group /Inorganic Chemistry Department/Science Faculty/Universidad de Alicante, Av. Alicante s/n, 03690, San Vicente del Raspeig, Alicante, Spain

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P1.14 **NO reduction by CO using Pt/zeolites in an oxidative environment**

M. M. Behera[1,2], J. Akil[1], R. Cousin[1], C. Poupin[1], S. Siffert[1], D. Thomas[2] and G. De Weireld[3]

[1] Unité de Chimie Environnementale et Interactions sur le vivant (UCEIV), ULCO, 145, Avenue Maurice Schumann Dunkerque 59140 France

[2] Service de Génie des Procédés chimiques et biochimiques, University of Mons, 20 place du Parc, Mons 7000 Belgium

[3] Service de Thermodynamique et de Physique mathématiques, University of Mons, 20 place du Parc, Mons 7000 Belgium

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P1.15 **Effects of Al-distribution on NH_3 adsorption in Cu-CHA**

D. Schörling[1], Y. Feng[1], L. Chen[1] and H. Grönbeck[1]

[1] Department of Physics and Competence Centre for Catalysis, Chalmers University of Technology, 412 96 Göteborg, Sweden

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P1.16 **NH_3-NO SCR catalysts for engine exhaust gases abatement: replacement of toxic V_2O_5 with MnO_x to improve the environmental sustainability**

L. Consentino[1], G. Pantaleo[1], V. La Parola[1], C. Migliore[1], E. La Greca[1] and L.F. Liotta[1]

[1] Institute for the Study of Nanostructured Materials (ISMN)-CNR, via Ugo La Malfa, 153, 90146, Palermo, Italy

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P1.17 **Diesel oxidation catalyst $PtPd/MnO_x$-Al_2O_3: prospects for diesel soot emission control**

S. A. Yashnik[1] and Z. R. Ismagilov[1,2]

[1] Boreskov Institute of catalysis, Novosibirsk,630090 Russia

[2] Institute of Coal Chemistry and Material Science, Kemerovo, 650000, Russia

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Session 2 : Emission control from gasoline engines

P2.01 **Preparation of novel three-way catalyst supported by hexagonal $YbMnO_3$ and its catalytic performance**

M. Inoue[1]; K. Iwase[1], S. Watanabe[1], M. Yamaguchi[1], Y. Nagao[1], Y. Endo[1], T. Wakabayashi [1], T. Endo[2], S. Hosokawa[3,4] and T. Tanaka[2,4]

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P2.02 **Copper catalysts supported on a barium deficient perovskites for CO oxidation reaction**

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[1] Materiales Carbonosos y Medio Ambiente/Inorganic Chemistry Department/Science Faculty/Universidad de Alicante, Av. Alicante s/n, 03690, San Vicente del Raspeig, Alicante, Spain

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P2.03 **Effective improvement of Pt catalyst for exhaust gas purification by using the highly crystallized CeO_2 as an additive**

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[2] Nagoya Institute of technology, Advanced Ceramics Research Center, Asahigaoka 10-6-29, Tajimi, 507-0071, Japan

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P2.04 **Investigating the origin of hysteresis in CO oxidation using steady state isotopic transient kinetic analysis and infrared spectroscopy**

I. Hatoum[1], C. Dujardin[1], M. Richard[1]

[1] Univ. Lille, CNRS, Centrale Lille, Univ. Artois, UMR 8181, UCCS - Unité de Catalyse et Chimie du Solide,59000 Lille, France

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P2.05 **Manganese based perovskites in soot oxidation: far from noble metals?**

E. Brusamarello[1], A. Osti[1], G. Peron[1], F. Nigrelli[1] and A. Glisenti[1]

[1] Dept. of Chemical Sciences, University of Padova, Padova 35133 - Italy

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P2.06 **CO-assisted NO reduction on ceria-zirconia with low metal content (Pt, Ag, Cu or Co): Formulations for TWCs**

J.C. Martínez-Munuera[1], L. Castoldi[2], R. Matarrese[2], L. Lietti[2] and A. García-García[1]

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P2.07 **Evolution of Pd single site catalysts supported on CeO_2 under CO oxidation conditions monitored by operando XAS and DRIFT spectroscopy**

D. Gashnikova[1], F. Maurer[1], M. Casapu[1] and J.-D. Grunwaldt[1]

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P2.08 **Activation of Pt/CeO_2 catalysts under applied conditions: from powder catalysts to monoliths**

F. Maurer[1], S. Struzek[1], T. Delrieux[1], P. Lott[1], M. Casapu[1], O. Deutschmann[1] and J.-D. Grunwaldt[1,2]

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P2.09 **Systematic investigation on the effect of ceria morphology on the sintering and redispersion behavior of Pd and Pt nanoparticles**

P. Dolcet[1], A. De Giacinto[2], M. Maurer[1], J. Czechowski[1], F. Maurer[1], S. Gross[2], M. Casapu[1] and J.-D. Grunwaldt[1,3]

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P2.10 **Systematic investigation on the effect of noble metal precursor and gas atmosphere on the aging of Pd/CeO_2-ZrO_2 TWC**

S.-L. Heck[1], G. Nails[1], P. Dolcet[1], H. A. Suarez Orduz[1,2], P. Glatzel[2], M. Casapu[1], J.-D. Grunwaldt[1,3]

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P2.11 **Evaluating the uncatalyzed and catalyzed combustion behavior of model and real GDI soot from TG-MS experiments: obtention of kinetic parameters**

I. Mekki[1], J.A. Aracil-Hernández[1], J.C. Martínez-Munuera[1], P. Piqueras[2], J. de la Morena[2] and A. García-García[1]

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P2.12 **Ru as cost-effective alternative for Rh in TWCs**

P. Joshi[1] and M. Bonifer [1]

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Session 3 : Emission control from de-fossilized fuels-powered engines

P3.01 **Pd supported on H-beta and H-SSZ-13 for complete methane oxidation**

I. Friberg[1], A.H. Clark[2], P. H. Ho[1], N. Sadokhina[1], G.J. Smales[3], J. Woo[1], X. Auvray[1], D. Ferri[2], M. Nachtegaal [2], O. Kröcher [2,4] and L. Olsson[1]

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[4] École polytechnique fédérale de Lausanne (EPFL), Institute for Chemical Sciences and Engineering, CH-1015 Lausanne, Switzerland

P3.02 **Stable Palladium oxide clusters encapsulated in silicalite-1 for complete methane oxidation**

T. Li[1], A. Beck[1], F. Krumeich[1], L. Artiglia[2], M.K. Ghosalya[1,2], M. Roger[2,3], D. Ferri[2], O. Kröcher[2,3], V. Sushkevich[2], O.V. Safonova[2] and J.A. van Bokhoven[1,2]

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[2] Paul Scherrer Insitut, 5232 Villigen, Switzerland

[3] École polytechnique fédérale de Lausanne (EPFL), Institute for Chemical Sciences, 1015 Lausanne, Switzerland

P3.03 **Dual catalytic bed system for O_2 activation in CH_4 abatement for emission control of Natural Gas Vehicle**

M. Delporte[1,2], F. Can[1], X. Courtois[1], N. Bion[1] and H. Kaper[2]

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[2] CNRS/Saint-Gobain CREE, LSFC, Saint-Gobain Research Provence, Cavaillon, France

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P3.04 **Exploring synthesis approaches of Co-based catalysts for the efficient oxidation of CH_4 and CO**

E. F. Iliopoulou[1], S. Darda[1,2], E. P. Pachatouridou[1] and A. A. Lappas[1]

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[2] Department of Chemical Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece

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P3.05 **Rh/$Ce_xZr_{1-x}O_2$ as NGV catalyst : Impact of the preparation of ceria-zirconia support on the catalytic performance in methane abatement**

A. Decoster[1], A. Osti[1], C. Ciotonea[1], C. Abreu Teles[1] and P. Granger[1]

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P3.06 **Advanced blends as advisable extended option for thermal engines: emissions and performance on a Diesel Engine**

S. Molina-Ramírez[1], M. Cortés-Reyes[1], C. Herrera[1], M.A. Larrubia[1], J.A. Auñón[2] and L.J. Alemany[1]

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P3.07 **Exhaust after-treatment of vehicles operated with the synthetic Diesel fuel OME: Lab-scale investigations of different catalysts using driving cycle data**

D. Eisenbeil[1,2], P. Demel[1], M. Haas[1,2], H. Hamel[1], A. Dreizler[1], C. Beidl[1] and M. Votsmeier[1,2]

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[2] Umicore AG & Co. KG, Rodenbacher Chaussee 4, 63457 Hanau, Germany

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Session 4 : Technological innovations

P4.01 **A study on the emissions characteristics of an ammonia/methane dual fuel engine at elevated pressures**

X. Wu[1], Y. Feng[1], Y. Zhu[1] and P. Ming[2]
[1] College of Power and Energy Engineering, Harbin Engineering University, Harbin, 150001, China
[2] Sun Yat-sen University, Zhuhai, 519000, China

P4.02 **Strength interaction of Pd and perovskite according to the method for Pd incorporation in NGV catalysts: impact on aging**

A. Osti[1], J.P. Dacquin[2], A. Glisenti[1,3] and P. Granger[2]
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[3] ICMATE, Department of Chemical Sciences – via F. Marzolo, 1 – 35131 Padova, Italy

P4.03 **The Impact of thermochemical exhaust energy recovery using renewable fuels on gasoline direct injection engine performance**

M. Mardani[1], A. Tsolakis[1] and J. M. Herreros[1]
[1] Mechanical Engineering, School of Engineering, University of Birmingham, Birmingham B15 2TT, UK

P4.04 **Probing the oxide formation on Pt, Pd and Pt/Pd catalysts during NO oxidation by Atom Probe Tomography (APT)**

YH. Lee[1], D. Dobesch[2], U. Tuttlies[2], P. Stender[1], G. Schmitz[1] and U. Nieken[2]
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[2] Institute of Chemical Process Engineering, University of Stuttgart, Böblinger Str. 78, 70199 Stuttgart, Germany

P4.05 **Dual-zone catalyst for ozone-assisted hydrocarbon abatement at low temperatures**

A. I. Mytareva[1], S. A. Kanaev[1], D. A. Bokarev[1], G. N. Baeva[1] and A. Yu. Stakheev[1]
[1] N.D. Zelinsky Institute of Organic Chemistry Russian Academy of Sciences, Moscow, 119991 Russia

P4.06 **Alumina-supported silver catalyst for O_3-assisted catalytic abatement of CO: effect of Ag loading**

A. I. Mytareva[1], S. A. Kanaev[1], D. A. Bokarev[1], G. N. Baeva[1] and A. Yu. Stakheev[1]
[1] N.D. Zelinsky Institute of Organic Chemistry Russian Academy of Sciences, Moscow, 119991 Russia

P4.07 **Low-temperature removal of NO_x on FeBeta: NH_3-SCR promoted by O_3 injection**

A. Yu. Stakheev[1], A. I. Mytareva[1], S. A. Kanaev[1] and D. A. Bokarev[1]

[1] N.D. Zelinsky Institute of Organic Chemistry Russian Academy of Sciences, Moscow, 119991 Russia

P4.08 **Hydrogen co-injection as a bridged technology for internal combustion engines**

S. Molina-Ramírez[1], M. Cortés-Reyes[1], C. Herrera[1], M.A. Larrubia[1], J.A. Auñón[2] and L.J. Alemany[1]

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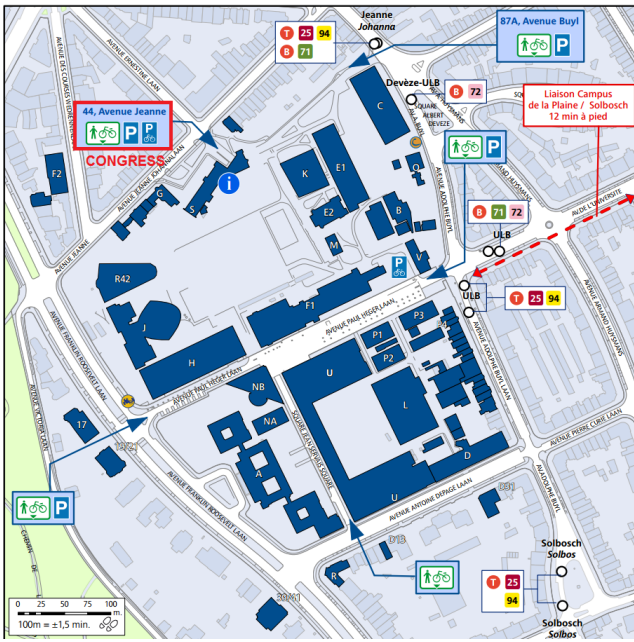

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