

**Twelfth International Congress on
Catalysis and
Automotive Pollution Control**



**Second Circular
Programme**

August 29th – 31st, 2022

Brussels, Belgium

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

T. Visart de Bocarmé, Executive chairman

Tel.: +32 (0)2 650 57 24

E-mail: tvisart@ulb.ac.be

N. Kruse, Honorary chairman

O. Croquet, Congress manager

Tel.: +32 (0)2 650 57 10

E-mail: capoc@ulb.ac.be

MONDAY August 29th

Introductory session – part 1

8h00	Opening of the registration desk
8h50	Welcome address by the vice-rector for sustainable development
9h00	Global Powertrain Trends in the Race Toward Zero
L1	Dr. Kelly Senecal Convergent Science, USA
9h40	Fleet & Fuels pathways for a carbon neutral road transport in Europe by 2050: a review of possible options
L2	Roland Dauphin Concawe, Brussels, Belgium
10h20	Coffee break – Poster session – General overview

ORAL SESSIONS

Session 1: “Emission control from Diesel engines”

11h00	First-principles-based insights on the selectivity in NH ₃ -SCR over Cu-CHA
K1a	Y. Feng ¹ , X. Wang ¹ , T.V.W. Janssens ² , P.N.R. Vennestrom 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
11h30	1BPd/zeolite-based trap materials – agglomeration of Pd as a degradation mode
O1.01	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

11h50 Model based optimization of SCR catalyst systems with a twin-dosing ammonia strategy

O1.02 *S. Hartl¹, M. Bendrich¹, B. Betz¹, A. Scheuer¹ 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

12h10 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. Eck¹, I. Scherbej^{1,2}, P. Lott¹, M. Börnhorst¹ 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. Castoldi¹, R. Matarrese¹, L. Lietti¹, Y. Hamid¹ and S. Morandi²*

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 NH₃-SCR

O1.05 *D. E. Doronkin¹, J. Becher¹, J.-D. Grunwaldt¹ and T. L. Sheppard¹*

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	<i>X. Wang¹, L. Chen¹, P. N. R. Vennestrom², T. V. W. Janssens², J. Jansson³, H. Grönbeck¹ and M. Skoglundh¹</i>
	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 N₂O formation over Cu-functionalized zeolites during ammonia-SCR: effect of various NO/NO₂ Ratio
O1.07	<i>G. Isapour¹, A. Wang², J. Han², D. Creaser², L. Olsson², M. Skoglundh¹ and H. Härelind¹</i>
	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
15h40	Coffee Break – Poster session
16h20	Spatiotemporal features of NO and hydrocarbons trapping and conversion in a PNA+HCT+OC sequential monolith configuration
K1b	<i>A. Gupta¹ and M.P. Harold¹</i>
	¹ University of Houston, Houston, Texas, 77204, USA.
16h50	Understanding the aging phenomena of Diesel oxidation catalysts
O1.08	<i>M. Agote-Arán¹, M. Elsener¹, F. W. Schütze², C. M. Schilling², M. Sridhar³, E. Katsaounis³, O. Kröcher^{1,4} and D. Ferri¹</i>
	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

17h10 CO oxidation to probe Cu dimers in Cu-CHA catalysts: the impact of NH₃ loading

O1.09 *U. Iacobone¹, R. Villamaina², I. Nova¹, E. Tronconi¹, M.P. Ruggeri², J. Collier² and D. Thompsett²*

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. Masoudi¹, N. Poliakov¹, S. Noorfeshan¹, J. Hensel¹ and E. Tegeler¹*

¹ Emissol LLC, Mill Creek, Washington, USA

18h00 Departure by bus to the reception

19h00 Reception at the Royal Belgian Institute of Natural Sciences



TUESDAY August 30th

Introductory session – part 2

8h30 **Euro 7 emission standard proposal and its effects on future after-treatment technology**

L3 *Panagiota Dilara*

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

9h10 **Renewable Fuels as necessary component for a GHG-neutral mobility**

L4 *Olaf Toedter*

Karlsruher Institut für Technologie (KIT), Germany

Session 2 : emission control from gasoline engines

9h50 **Evaluating different strategies to minimize cold-start emissions from gasoline engines**

K2 *S. Nandi¹, C. Chaillou², E. Laigle², A. Nicolle²,
C. Norsic³, P. Granger¹, C. Dujardin¹ and M. Richard¹*

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

10h20 **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. Brusamarello¹, A. Osti¹, C. Blonda², C. Salazar
Castro³, A. E. Pascui⁴, P. Canu² and A. Glisenti¹*

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

10h40 **Coffee Break – Poster session**

11h00	Modeling the filtration performance of coated gasoline particulate filters at practical driving conditions using microtomography
O2.02	<i>R. Walter^{1,2}, J. Neumann² and O. Hinrichsen¹</i> ¹ Technical University of Munich, D-85748 Garching, Germany ² BMW Group, Development Powertrain, D-80937 Munich, Germany
11h20	Structural dynamics of highly dispersed Pt single sites supported on CeO₂ for oxidation reactions
O2.03	<i>P. Dolcet¹, F. Maurer¹, M. Casapu¹, and J.-D Grunwaldt^{1,2}</i> 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
11h40	Internal transport limitations in catalytic filters for exhaust gas aftertreatment
O2.04	<i>M. Blažek¹, R. Pečinka¹, J. Němec¹, P. Kočí¹, M. Svoboda² and A. York³</i> 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
12h00	An isotopic study on oxygen interaction over ceria-praseodymia mixed oxides with pulse experiments using ¹⁸O₂. Implications on catalysed soot combustion activities in the GDI context
O2.05	<i>J.C. Martínez-Munuera¹, M. Cortés-Reyes² and A. García-García¹</i> 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.

12h20	High PN-FE with on-wall coated gasoline particulate filter catalyst
O2.06	<i>H. Kurihara¹, S. Akita¹, Y. Nagai¹, R. Myochi¹, K. Horii¹, N. Munakata¹, T. Ueda¹ and T. Wakabayashi¹</i> <i>¹ Mitsui Mining & Smelting Co., Ltd., Ageoshimo 1013-1, Ageo, 362-0025, Japan</i>

12h40	Lunch – Poster session
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Session 3 : emission control from de-fossilized fuels-powered engines

14h40	Exhaust aftertreatment of vehicles operated with the synthetic Diesel fuel OME: A perspective
K3a	<i>D. Eisenbeil^{1,2}, P. Demel¹, M. Haas^{1,2}, H. Hamel¹, A. Dreizler¹, C. Beidl¹ and M. Votsmeier^{1,2}</i> <i>¹ Technische Universität Darmstadt, Alarich-Weiss-Straße 8, 64287 Darmstadt, Germany</i> <i>² Umicore AG & Co. KG, Rodenbacher Chaussee 4, 63457 Hanau, Germany</i>

15h10	CH₄ and CH₂O oxidation in gas engine exhaust on Fe-based catalysts
O3.01	<i>M. Mehne¹ and S. Kureti¹</i> <i>¹ TU Freiberg, Chair of Reaction Engineering, German</i>

15h30	HCN production from formaldehyde during the selective catalytic reduction of NO_x with NH₃ over V₂O₅/WO₃-TiO₂
O3.02	<i>R.J.G. Nuguid^{1,2}, M. Elsener¹, O. Kröcher^{1,2} and D. Ferri¹</i> <i>¹ Paul Scherrer Institut, Forschungsstrasse 111, CH-5232 Villigen PSI (Switzerland)</i> <i>² École polytechnique fédérale de Lausanne (EPFL), Institute for Chemical Sciences and Engineering, CH-1015 Lausanne (Switzerland)</i>

15h50	Coffee Break – Poster Session
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16h30 Discussions on posters

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

O3.03 *S. Walter¹, G. Hagen¹, D. Koch², A. Geißelmann³ and R. Moos¹*

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 NH₃-SCR of alternative fuel engines

O3.04 *S. Barth^{1,2}, D. Zengel², M. Casapu² 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

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/Al₂O₃ for CH₄ oxidation - from lean burn applications to three way catalysis**
- K3b* *M. Roger^{1, 2}, T. Franken¹, M. Agote-Arán¹, O. Kröcher^{1,2} and D. Ferri¹*
- 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. Borchers¹, K. Keller¹, P. Lott¹ and O. Deutschmann¹*
- ¹ Karlsruhe Institute of Technology, Karlsruhe, 76131 Germany
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Session 4 : technological innovations

- 9h50** **Low-temperature NO_x reduction by H₂ in real diesel exhaust gas**
- O4.01* *E. Esser¹ and S. Kureti¹*
- ¹ TU Freiberg, Institute of Energy Process and Chemical Engineering, Chair of Reaction Engineering, Freiberg, Germany
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- 10h10** **Reducing cold-start-emissions by microwave-based catalyst heating: simulative studies**
- O4.02* *V. Malashchuk¹, S. Walter¹, G. Hagen¹, M. Engler², G. Link², J. Jelonnek², F. Raß³ and R. Moos¹*
- 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
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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 H₂ on Mo-promoted Pt/ZrO₂ catalysts in lean exhaust gases**
A. D. Schröder¹ and S. Kureti¹
¹ TU Freiberg, Chair of Reaction Engineering, Germany
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- P1.02** **Aging of Pt/Al₂O₃ Diesel oxidation catalyst: hydrothermal vs chemical effects**
M. Agote-Arán,¹ C. Coffano,² L. Lietti² and D. Ferri
¹ Paul Scherrer Institut, Villigen 5232, Switzerland
² Politecnico di Milano, Milano 20133, Italy
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- P1.03** **Effect of an Al₂O₃-based binder on the structure and activity of extruded Fe ZSM 5**
F. Buttignol^{1,2}, A. Garbujo³, P. Biasi³, D. Rentsch⁴, O. Kröcher^{1,2} and D. Ferri¹
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)
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- P1.04** **Aging characteristics of zeolite based catalysts for nitrous oxide abatement in simulated feeds of nitric acid plant**
F. Buttignol^{1,4}, A. Garbujo², R. Lanza³, P. Biasi², O. Kröcher^{1,4} and D. Ferri¹
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)
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- P1.05** **Stability and reactivity of a polyoxymethylene dimethyl ether over typical catalysts of Diesel emission control**
M. Elsener¹, D. Ferri¹, E. Jacob² 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 NH₃**
M. Elsener¹, R.J.G. Nuguid^{1,2}, O. Kröcher^{1,2} and D. Ferri¹
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 Araujo¹, P. Rocher¹, G. Pétaud¹, A. Caravaca¹ and S. Gil¹
¹ Université Claude Bernard Lyon 1, CNRS, IRCELYON, Villeurbanne, F-69622, France
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- P1.08** **NH₃-SCR transient redox behavior: effect of O₂ feed content variation over Cu-CHA**
N. D. Nasello¹, F. Gramigni¹, I. Nova¹, E. Tronconi¹, S. Dieterich², F. Hofmann² and M. Weibel²
¹ Politecnico di Milano, Milano, Via La Masa 34, I-20156, Italy
² Mercedes-Benz AG, Stuttgart, 019-C654 RD/PPD, 70546, Germany
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- P1.09** **NH₃-SCR reaction pathways over (W or Nb) / ceria-zirconia: influence of the partial substitution of zirconium for praseodymium**
R. Pointecouteau^{1,2}, C. Croisé¹, J. Akil¹, A. Demourgues², N. Bion¹, X. Courtois¹ and F. Can¹
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. Mail³, A. Scheuer², M. Bendrich², E. Quinet², A. Schuler², T. Scherer³, 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;
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- P1.11 Unraveling real soot removal mechanism over DPNR Pt-Ba-K/Al₂O₃ catalyst**
M. Cortés-Reyes¹, J.C. Martínez-Munuera², C. Herrera¹, M.A. Larrubia¹, A. García-García² and L.J. Alemany¹
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. Marchuk¹, D. E. Doronkin² 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_xO₃ catalysts for NO_x-assisted diesel soot oxidation**
S. Montilla Verdú¹, V. Torregrosa Rivero¹, Á. Díaz Verde¹ and M. J. Illán Gómez¹
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. Aki¹, R. Cousin¹, C. Poupin¹, S. Siffert¹, D. Thomas² and G. De Weireld³
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 NH₃ adsorption in Cu-CHA**
D. Schörling¹, Y. Feng¹, L. Chen¹ and H. Grönbeck¹
¹ Department of Physics and Competence Centre for Catalysis, Chalmers University of Technology, 412 96 Göteborg, Sweden
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- P1.16 NH₃-NO SCR catalysts for engine exhaust gases abatement: replacement of toxic V₂O₅ with MnO_x to improve the environmental sustainability**
L. Consentino¹, G. Pantaleo¹, V. La Parola¹, C. Migliore¹, E. La Greca¹ and L.F. Liotta¹
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-Al₂O₃: prospects for diesel soot emission control**
S. A. Yashnik¹ 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 YbMnO₃ and its catalytic performance**
M. Inoue¹, K. Iwase¹, S. Watanabe¹, M. Yamaguchi¹, Y. Nagao¹, Y. Endo¹, T. Wakabayashi¹, T. Endo², S. Hosokawa^{3,4} and T. Tanaka^{2,4}
¹ Mitsui Mining & Smelting Co., Ltd., Ageosimo 1013-1, Ageo, 362-0025, Japan
² Department of Molecular Engineering, Graduate School of Engineering, Kyoto University, Kyotodaigaku Katsura, Nishikyo-ku, Kyoto, 615-8245, Japan

³ Faculty of Materials Science and Engineering, Kyoto Institute of Technology, Matsugasaki, Sakyo-ku, Kyoto 606-8585, Japan

⁴ Elements Strategy Initiative for Catalysts and Batteries (ESICB), Kyoto University, Kyotodaigaku Katsura, Nishikyo-ku, Kyoto, 615-8245, Japan.

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

D. Verde¹, V. Torregrosa Rivero¹ and M. J. Illán Gómez¹

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

P2.03 Effective improvement of Pt catalyst for exhaust gas purification by using the highly crystallized CeO₂ as an additive

H. Tanaka^{1,2}, I. Morita¹, Y. Nagao¹, Y. Endo¹, T. Wakabayashi¹ and M. Haneda²

¹ Mitsui Mining & Smelting Co., Ltd., Ageosimo 1013-1, Ageo, 362-0025, Japan

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

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

I. Hatoum¹, C. Dujardin¹, M. Richard¹

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

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

E. Brusamarello¹, A. Osti¹, G. Peron¹, F. Nigrelli¹ and A. Glisenti¹

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

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

J.C. Martínez-Munuera¹, L. Castoldi², R. Matarrese², L. Lietti² and A. García-García¹

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 Laboratory of Catalysis and Catalytic Processes (LCCP), Dipartimento di Energia, Politecnico di Milano, Via La Masa 34, 20156 Milano, Italy.

- P2.07 Evolution of Pd single site catalysts supported on CeO₂ under CO oxidation conditions monitored by operando XAS and DRIFT spectroscopy**
D. Gashnikova¹, F. Maurer¹, M. Casapu¹ and J.-D. Grunwaldt¹
¹ Karlsruhe Institute of Technology (KIT), Karlsruhe, 76131, Germany
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- P2.08 Activation of Pt/CeO₂ catalysts under applied conditions: from powder catalysts to monoliths**
F. Maurer¹, S. Struzek¹, T. Delrieux¹, P. Lott¹, M. Casapu¹, O. Deutschmann¹ and J.-D. Grunwaldt^{1,2}
¹ Institute for Chemical Technology and Polymer Chemistry (ITCP), Karlsruhe Institute of Technology (KIT), Engesserstraße 20, 76131 Karlsruhe, Germany
² Institute of Catalysis Research and Technology (IKFT), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany
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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. Dolcet¹, A. De Giacinto², M. Maurer¹, J. Czechowski¹, F. Maurer¹, S. Gross², M. Casapu¹ and J.-D. Grunwaldt^{1,3}
¹ Institute for Chemical Technology and Polymer Chemistry (ITCP), Karlsruhe Institute of Technology (KIT), Engesserstraße 20, 76131 Karlsruhe, Germany
² Dipartimento di Scienze Chimiche (DiSC), Università degli Studi di Padova, via Marzolo 1, 35131 Padova, Italy
³ Institute of Catalysis Research and Technology (IKFT), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany
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- P2.10 Systematic investigation on the effect of noble metal precursor and gas atmosphere on the aging of Pd/CeO₂-ZrO₂ TWC**
S.-L. Heck¹, G. Nails¹, P. Dolcet¹, H. A. Suarez Orduz^{1,2}, P. Glatzel², M. Casapu¹, J.-D. Grunwaldt^{1,3}
¹ Institute for Chemical Technology and Polymer Chemistry (ITCP), Karlsruhe Institute of Technology (KIT), Engesserstraße 20, 76131 Karlsruhe, Germany
² European Synchrotron Radiation Facility, 71 avenue des Martyrs, CS 40220, 38043 Grenoble Cedex 9, France
³ Institute of Catalysis Research and Technology (IKFT), Karlsruhe Institute of Technology (KIT), Hermann-von-Helmholtz-Platz 1, 76344 Eggenstein-Leopoldshafen, Germany
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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. Mekki¹, J.A. Aracil-Hernández¹, J.C. Martínez-Munuera¹, P. Piqueras², J. de la Morena² and A. García-García¹

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 CMT-Motores Térmicos, Universitat Politècnica de València, Camino de Vera s/n, 46022 Valencia, Spain.

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

P. Joshi¹ and M. Bonifer¹

¹ Heraeus Precious Metals GmbH & Co.KG, Business Unit Catalysts, Heraeusstr. 12-14, 63450 Hanau, Germany

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. Friberg¹, A.H. Clark², P. H. Ho¹, N. Sadokhina¹, G.J. Smales³, J. Woo¹, X. Auvray¹, D. Ferri², M. Nachttegaal², O. Kröcher^{2,4} and L. Olsson¹

¹ Chemical Engineering, Competence Centre for Catalysis, Chalmers University of Technology, SE-412 96 Gothenburg, Sweden

² Paul Scherrer Institut (PSI), CH-5232 Villigen, Switzerland

³ Bundesanstalt für Materialforschung und -prüfung (BAM), Unter den Eichen 87, DE-12205 Berlin, Germany

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. Li¹, A. Beck¹, F. Krumeich¹, L. Artiglia², M.K. Ghosalya^{1,2}, M. Roger^{2,3}, D. Ferri², O. Kröcher^{2,3}, V. Sushkevich², O.V. Safonova² and J.A. van Bokhoven^{1,2}

¹ ETH Zurich, Department of Chemistry and Applied Bioscience, Institute for Chemical and Bioengineering, Vladimir-Prelog-Weg 1, 8093 Zurich, Switzerland

² Paul Scherrer Institut, 5232 Villigen, Switzerland

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

- P3.03 Dual catalytic bed system for O₂ activation in CH₄ abatement for emission control of Natural Gas Vehicle**
M. Delporte^{1,2}, F. Can¹, X. Courtois¹, N. Bion¹ and H. Kaper²
¹ Université de Poitiers, IC2MP, 86073 Poitiers Cedex 9, France
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 CH₄ and CO**
E. F. Iliopoulou¹, S. Darda^{1,2}, E. P. Pachatouridou¹ and A. A. Lappas¹
¹ Laboratory of Environmental Fuels and Hydrocarbons, CPERI/CERTH, Thessaloniki, 57001, Greece
² Department of Chemical Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece
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- P3.05 Rh/Ce_xZr_{1-x}O₂ as NGV catalyst : Impact of the preparation of ceria-zirconia support on the catalytic performance in methane abatement**
A. Decoster¹, A. Osti¹, C. Ciotonea¹, C. Abreu Teles¹ and P. Granger¹
¹ Univ. Lille, CNRS, Centrale Lille, Univ. Artois, UMR 8181 - UCCS - Unité de Catalyse et Chimie du Solide, F-59000 Lille, France
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- P3.06 Advanced blends as advisable extended option for thermal engines: emissions and performance on a Diesel Engine**
S. Molina-Ramírez¹, M. Cortés-Reyes¹, C. Herrera¹, M.A. Larrubia¹, J.A. Auñón² and L.J. Alemany¹
¹ Departamento de Ingeniería Química, Facultad de Ciencias, Campus de Teatinos, Universidad de Málaga, Málaga, E-29071, Spain
² Departamento de Máquinas y Motores Térmicos, Escuela de Ingenierías, Campus de Teatinos, Universidad de Málaga, Málaga, E-29071, Spain
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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. Demel¹, M. Haas^{1,2}, H. Hamel¹, A. Dreizler¹, C. Beidl¹ 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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Session 4 : technological innovations

- P4.01** **A study on the emissions characteristics of an ammonia/methane dual fuel engine at elevated pressures**
X. Wu¹, Y. Feng¹, Y. Zhu¹ and P. Ming²
¹ College of Power and Energy Engineering, Harbin Engineering University, Harbin, 150001, China
² Sun Yat-sen University, Zhuhai, 519000, China
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- P4.02** **Strength interaction of Pd and perovskite according to the method for Pd incorporation in NGV catalysts: impact on aging**
A. Osti¹, J.P. Dacquin², A. Glisenti^{1,3} and P. Granger²
¹ Univ. Padova, Department of Chemical Sciences – via F. Marzolo, 1 – 35131 Padova, Italy
² Univ. Lille, CNRS, Centrale Lille, Univ. Artois, UMR 8181 - UCCS - Unité de Catalyse et Chimie du Solide, F-59000 Lille, France
³ ICMATE, Department of Chemical Sciences – via F. Marzolo, 1 – 35131 Padova, Italy
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- P4.03** **The Impact of thermochemical exhaust energy recovery using renewable fuels on gasoline direct injection engine performance**
M. Mardani¹, A. Tsolakis¹ and J. M. Herreros¹
¹ Mechanical Engineering, School of Engineering, University of Birmingham, Birmingham B15 2TT, UK
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- P4.04** **Probing the oxide formation on Pt, Pd and Pt/Pd catalysts during NO oxidation by Atom Probe Tomography (APT)**
YH. Lee¹, D. Dobesch², U. Tuttlies², P. Stender¹, G. Schmitz¹ and U. Nieken²
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
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- P4.05** **Dual-zone catalyst for ozone-assisted hydrocarbon abatement at low temperatures**
A. I. Mytareva¹, S. A. Kanaev¹, D. A. Bokarev¹, G. N. Baeva¹ and A. Yu. Stakheev¹
¹ N.D. Zelinsky Institute of Organic Chemistry Russian Academy of Sciences, Moscow, 119991 Russia
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- P4.06** **Alumina-supported silver catalyst for O₃-assisted catalytic abatement of CO: effect of Ag loading**
A. I. Mytareva¹, S. A. Kanaev¹, D. A. Bokarev¹, G. N. Baeva¹ and A. Yu. Stakheev¹
¹ N.D. Zelinsky Institute of Organic Chemistry Russian Academy of Sciences, Moscow, 119991 Russia
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- P4.07** **Low-temperature removal of NO_x on FeBeta: NH₃-SCR promoted by O₃ injection**
A. Yu. Stakheev¹, A. I. Mytareva¹, S. A. Kanaev¹ and D. A. Bokarev¹
¹ N.D. Zelinsky Institute of Organic Chemistry Russian Academy of Sciences, Moscow, 119991 Russia
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- P4.08** **Hydrogen co-injection as a bridged technology for internal combustion engines**
S. Molina-Ramírez¹, M. Cortés-Reyes¹, C. Herrera¹, M.A. Larrubia¹, J.A. Auñón² and L.J. Alemany¹
¹ Departamento de Ingeniería Química, Facultad de Ciencias, Campus de Teatinos, Universidad de Málaga, Málaga, E-29071, Spain
² Departamento de Máquinas y Motores Térmicos, Escuela de Ingenierías, Campus de Teatinos, Universidad de Málaga, Málaga, E-29071, Spain
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