Curriculum Vitae – Prof. Dr. Javier Pérez-Ramírez

Date of birth 28 October 1974 (50 y/o)
Place of birth Benidorm, Spain
Citizenship Spanish
Civil status Married to Amalia, son Erik (21 y/o), daughter Marlies (15 y/o)
Address ETH Zurich
Institute for Chemical and Bioengineering
Department of Chemistry and Applied Biosciences
Vladimir-Prelog-Weg 1, HCI E125, 8093 Zurich, Switzerland
Phone +41 44 633 71 20 (office) | +41 79 721 65 89 (mobile)
E-mail jpr@chem.ethz.ch **Website** http://www.ace.ethz.ch **Twitter** catalysis_ethz
Google Scholar Javier Perez-Ramirez **ORCID** 0000-0002-5805-7355

Education

2022 – 2023	Chief Sustainability Officer, Professional Certificate, Massachusetts Institute of Technology, US
1998 – 2002	Ph.D. Catalysis Engineering (cum laude), Delft University of Technology, Netherlands. Catalyzed N_2O Activation: Promising (New) Catalysts for Abatement and Utilization. Advisors: Profs. F. Kapteijn and J.A. Moulijn
1993 – 1997	M.Sc. Chemical Engineering with highest distinction, University of Alicante, Spain

Summary of Career

2024 – 2025	ExxonMobil Chair Visiting Chair Professor, National University of Singapore (NUS)
2019 – 2023	Isaac Manasseh Meyer Visiting Chair Professor, National University of Singapore
2010 – to date	Full Professor of Catalysis Engineering, ETH Zurich, Switzerland
2005 – 2009	ICREA Professor and Group Leader, ICIQ, Tarragona, Spain
2005 – 2008	Associate Professor, Chemical Engineering, Universitat Rovira i Virgili, Tarragona, Spain
2003-2005	Senior scientist, Yara International, Porsgrunn, Norway
2002-2003	Scientist, Norsk Hydro, Porsgrunn, Norway

Management Responsibilities and Service

2024 – to date	Member of the Research Commision, ETH Zurich
2020 – to date	Founder and Director of the NCCR Catalysis, www.nccr-catalysis.ch
2019 – 2022	Director of the NUS Flagship Green Energy Program, https://greenenergy.nus.edu.sg
2018 – 2022	Director of Study, Bachelor in Chemical Engineering and Master in Chemical and Bioengineering, ETH Zurich
2012 – 2014	Chairman of the Institute for Chemical and Bioengineering, ETH Zurich

Publications Summary

Hirsch index: 126 (Google Scholar) | 550+ publications in peer-reviewed scientific journals | >60000 citations, with an average of >100 citations per paper | In the last 5 years, 150+ publications and >30000 citations | Author of high-impact multidisciplinary and chemistry articles, e.g., Nature (#2), Nature Reviews Materials (#1), Nature Reviews Chemistry (#1) | Nature Chemistry (#5), Nature Communications (#13), Nature Nanotechnology (#4), Nature Catalysis (#8), Nature Chemical Engineering (#2), Chemical Reviews (#2), Chemical Society Reviews (#9), Angewandte Chemie International Edition (#32), Journal of the American Chemical Society (#6) | Inventor of 25 patents/patent applications, 4 of which are exploited | 15 articles in proceedings and 5 book chapters | Guest-edited 6 themed issues | Above data gathered on October 10, 2024. Full list available at http://www.ace.ethz.ch.

Research Mission

jpr develops catalytic materials and process concepts to drive sustainable chemical and energy production at scale. Grounded in green chemistry principles, his research delivers innovative solutions for transforming challenging feedstocks, like CO_2, biomass, and plastic waste, into renewable resources toward circular carbon goals. His approach integrates precision synthesis of nanostructured materials, cutting-edge characterization, and catalytic evaluation under real-world conditions, introducing digital tools and sustainability metrics to accelerate innovation and maximize societal impact. Recent research highlights are provided in page 2 of this document.

Keywords

Catalysis | Nanoscale engineering | Circular carbon | Green chemistry | Sustainability

Recent Research Highlights by Topic

CO_2 conversion to green methanol

Atomic-scale engineering of indium oxide promotion by palladium for methanol production via CO_2 hydrogenation, M.S. Frei, J. Pérez-Ramírez*, et al. *Nat. Commun.* **2019**, 10, 3377 (doi:10.1038/s41467-019-11349-9)

Plant-to-planet analysis of CO_2-based methanol processes, A. González-Garay, J. Pérez-Ramírez*, et al. *Energy Environ. Sci.* **2019**, 12, 3425 (doi:10.1039/C9EE01673B)

Indium oxide as a superior catalyst for methanol synthesis via CO_2 hydrogenation, O. Martin, J. Pérez-Ramírez*, et al. *Angew. Chem. Int. Ed.* **2016**, 55, 6261 (doi:10.1002/anie.201600943)

Electrocatalyst design for energy applications

Long-chain hydrocarbons via CO_2 electroreduction enabled by polarized nickel catalysts, Y. Zhou, J. Pérez-Ramírez*, et al., *Nat. Catal.* **2022**, 5, 545 (doi:10.1038/s41929-022-00803-5)

Key role of chemistry versus bias in electrocatalytic oxygen evolution, H.N. Nong, J. Pérez-Ramírez, et al., *Nature* **2020**, 587, 408 (doi:10.1038/s41586-020-2908-2)

Electrocatalytic reduction of nitrogen: from Haber-Bosch to ammonia artificial leaf, A.J. Martín, T. Shinagawa, J. Pérez-Ramírez*, *Chem* **2019**, 5, 263 (doi:10.1016/j.chempr.2018.10.010)

Chemical recycling of plastic waste

Consumer grade polyethylene recycling via hydrogenolysis on ultrafine supported ruthenium nanoparticles, S.D. Jaydev, J. Pérez-Ramírez*, et al. *Angew. Chem. Int. Ed.* **2024**, 63, e202317526 (doi:10.1002/anie.202317526)

Assessment of transport phenomena in catalyst effectiveness for chemical polyolefin recycling, S.D. Jaydev, J. Pérez-Ramírez*, et al. *Nat. Chem. Eng.* **2024**, 1, 565 (doi:10.1038/s44286-024-00108-3)

Catalytic processing of plastic waste on the rise, A.J. Martín, J. Pérez-Ramírez*, et al. *Chem* **2021**, 7, 1487 (doi:10.1016/j.chempr.2020.12.006)

Single atom catalysis

Geminal atom catalysis for cross-coupling, X. Hai, J. Pérez-Ramírez*, et al., *Nature* **2023**, 622, 754 (doi:10.1038/s41586-023-06529-z)

Nanostructuring unlocks high performance of platinum single-atom catalysts for stable vinyl chloride production, S.K. Kaiser, J. Pérez-Ramírez*, et al. *Nat. Catal.* **2020**, 3, 376 (doi:10.1038/s41929-020-0431-3)

A heterogeneous single-atom palladium catalyst surpassing homogeneous systems for Suzuki coupling, Z. Chen, J. Pérez-Ramírez*, et al. *Nat. Nanotechnol.* **2018**, 13, 702 (doi:10.1038/s41565-018-0167-2)

A stable single-site palladium catalyst for hydrogenations, G. Vilé, J. Pérez-Ramírez*, et al. *Angew. Chem. Int. Ed.* **2015**, 54, 11265 (doi:10.1002/anie.201505073)

Data science in catalysis research

Embracing data science in catalysis research, M. Suvarna, J. Pérez-Ramírez*, *Nat. Catal.* **2024**, 7, 624 (doi:10.1038/s41929-024-01150-3)

Active learning streamlines development of high performance catalysts for higher alcohol synthesis, M. Suvarna, J. Pérez-Ramírez*, et al. *Nat. Commun.* **2024**, 15, 5844 (doi:10.1038/s41467-024-50215-1)

Automated image analysis for single-atom detection in catalytic materials by transmission electron microscopy, S. Mitchell, J. Pérez-Ramírez*, et al., *J. Am. Chem. Soc.* **2022**, 144, 8018-8029 (doi:10.1021/jacs.1c12466)

Catalysis and sustainability from atom to planetary scale

The future of chemical sciences is sustainable, S. Mitchell, A.J. Martín, G. Guillén-Gosálbez, J. Pérez-Ramírez*, *Angew. Chem. Int. Ed.* **2024**, 63, e202318676 (doi:10.1002/anie.202318676)

Planetary metrics for the absolute environmental sustainability assessment of chemicals, V. Tulus, J. Pérez-Ramírez*, G. Guillén-Gosálbez, *Green Chem.* **2021**, 23, 9881 (doi:10.1039/D1GC02623B)

The need to integrate mass- and energy-based metrics with life cycle impacts for sustainable chemicals manufacture, E. Lucas, J. Pérez-Ramírez,* et al., *Green Chem.* **2024**, 26, 9300 (doi:10.1039/D4GC00394B)

Management of Programs at Large
jpr spearheaded the establishment of the NCCR Catalysis, a National Competence Center of Research in Switzerland launched in 2020 to develop carbon-neutral chemicals across the entire value chain. As director, he plays a vital role in managing and coordinating the activities of 50 diverse research groups from 13 institutions (totaling over 250 members), many of which had no prior history of collaboration. Under his leadership, the program has set ambitious goals in research, education, knowledge and technology transfer, data management, diversity, and communication. He was also the founding direction of the NUS Flagship Green Energy Program in Singapore.

Awards and Honors
2024 Highly Cited Researcher in the field of chemistry, Clarivate™
2024 Member of the Academy of Europe - the pan-European academy of science, humanities and letters
2024 Award for Excellence in Natural Gas Conversion, Natural Gas Conversion Board
2023 Highly Cited Researcher in the field of chemistry, Clarivate™
2023 Sustainability Award, Zhejiang NHU Co. Ltd., Xinchang, Zhejiang, China
2023 Distinción Europa, Ayuntamiento de Benidorm, Spain
2022 Highly Cited Researcher in the field of chemistry, Clarivate™
2022 Corresponding Member of the Royal Academy of Exact, Physical and Natural Sciences of Spain
2022 Award for outstanding contributions in oxidation catalysis, 9th World Conference on Oxidation Catalysis, UK
2022 Horizon Prize John Jeyes Award, Royal Society of Chemistry, UK
2021 EFCATS Robert K. Grasselli Award for Catalysis, European Federation of Catalysis Societies
2021 Frontiers in Catalysis Lecturer, Pacific Northwest National Laboratory, US
2020 College of Engineering Distinguished Lecturer, Nanyang Technological University, Singapore
2019 Paul H. Emmett Award in Fundamental Catalysis, North American Catalysis Society, US
2019 Distinguished Lecturer, Beijing Institute of Technology, China
2018 Syngenta Chemistry Lecture, Stein, Switzerland
2018 DICP Zhang Dayu Young Investigator Lectureship, Dalian, China
2018 Xing Da Lectureship, Peking University, China
2017 Sustainable Energy Award, Royal Society of Chemistry, UK
2014 Beilby Medal and Prize, Society of Chemical Industry and Royal Society of Chemistry, UK
2013 EFCATS Young Researcher Award, European Federation of Catalysis Societies
2013 Fellow of the Royal Society of Chemistry, UK
2013 Andrew Main Lectureship, University of Alberta, Canada
2012 Otto-Roelen Medal, Dechema, Germany
2012 UOP-Honeywell Invitational Lectureship, US
2009 Journal Grant for International Authors, Royal Society of Chemistry, UK
2007 Journal Grant for International Authors, Royal Society of Chemistry, UK
2003 KNCV Prijs voor Katalyse, Dutch Catalysis Society, the Netherlands
2002 Dow Energy Dissertation Award, The Dow Chemical Company, the Netherlands
1999 Presentation prize, AIChE Meeting, Scheiveningen, the Netherlands

Lectures
>40 plenary lectures and >35 keynote lectures and in international conferences, symposia, and workshops | >250 invited lectures at universities and companies.

Selected Visiting Periods
2019 – to date Department of Chemical and Biomolecular Engineering, National University of Singapore
2009 Laboratoire Catalyse et Spectrochimie, ENSICAEN, Caen, France
2007 Department of Chemical Engineering, UC Berkeley, United States
2003 Institut de Recherches sur la Catalyse, CNRS, Villeurbanne, France

Research Funding
Participation in more than 60 projects funded by governmental programs and industry | Principal investigator in more than 50 projects | >18 M€ research funds for own professorship in the period 2006-2022 | As Director of the Green Energy Program, responsible for a budget of 8 M€ in 2019-2022 | As Director of NCCR Catalysis, responsible for a budget of 28 M€ in 2020-2024 and 30 M€ in 2024-2028.

Past or Present Collaborations and Partnerships with Industry (alphabetical order)
BASF, Bayer, Clariant, Covestro, DSM, Givaudan, GTC Technology, Idorsia, Johnson Matthey, Micromeritics, Novartis, Roche, Sulzer, ThyssenKrupp, TotalEnergies, Yara International, Zeochem, Zhejiang NHU

Supervision of Research Work
Advised >50 graduate students, >25 PhD students, and >30 postdocs | Current advisor of 10 PhD students, 5 postdoctoral researchers, and 2 lecturers | 25 doctoral theses finalized under his supervision.

Teaching

2023 – to date	Concepts and Tools for Sustainable Chemicals Manufacture, ETH Zurich, Switzerland
2011 – to date	Heterogeneous Reaction Engineering, BSc Chemical Engineering, ETH Zurich, Switzerland
2010 – to date	Catalysis Engineering, MSc Chemical and Bioengineering, ETH Zurich, Switzerland
2010 – 2012	Characterization of Catalysts and Surfaces, ETH Zurich, Switzerland
2006 – 2008	Preparation of Heterogeneous Catalysts, Universitat Rovira i Virgili, Tarragona, Spain
2005 – 2007	Applied Chemical Kinetics, Universitat Rovira i Virgili, Tarragona, Spain
2005 – 2006	Transport Phenomena, Universitat Rovira i Virgili, Tarragona, Spain

Board of Scientific Journals

2023 – to date	Chair of the Editorial Board of Green Chemistry, RSC Publishing
2025 – to date	Advisory board of Advanced Synthesis & Catalysis, Wiley
2023 – to date	Advisory board of Catalysis Science & Technology, RSC Publishing
2020 – to date	Advisory board of Chem Catalysis, Cell Press
2019 – 2022	Editor in Chief of Catalysis Science & Technology, RSC Publishing
2018 – to date	Advisory board of Energy Technology, Wiley
2017 – 2024	Advisory board of ChemCatChem, Wiley
2012 – 2018	Advisory board of Advanced Functional Materials, Wiley
2012 – 2018	Advisory board of Applied Catalysis B Environmental, Elsevier
2011 – 2018	Associate Editor of Catalysis Science & Technology, RSC Publishing
2010 – 2012	Advisory board of ACS Catalysis, American Chemical Society
2008 – 2021	Advisory board of Catalysis Communications, Elsevier

Participation in National and International Boards

2017 – 2021	Founder and President of SwissCat, the Swiss Catalysis section
2017 – 2020	Core member of Energy-X (now Sun-Ergy)
2016 – 2022	Scientific Advisory Board of the National Institute of Chemistry, Ljubljana, Slovenia
2016 – to date	Scientific Advisory Board of the Max-Planck Institut für Kohlenforschung, Mulheim, Germany
2012 – 2017	Evaluation Committee member of ICREA, Barcelona, Spain
2012 – 2022	Executive Committee member of the Division of Chemical Research, Swiss Chemical Society
2010 – to date	Board member of the European Federation of Catalysis Societies, EFCATS

Chairman of Scientific Meetings

2024	Green Chemistry 25th Anniversary Symposium, Zurich
2018	Catalysis across scales, Swiss Chemical Society seminar, Interlaken, Switzerland
2018	Materials, Characterization and Catalysis workshop, ETH Zurich
2011 – 2013	Seminar series on Chemical and Biochemical Engineering, ETH Zurich
2012	Catalysis Science and Engineering session, Swiss Chemical Society meeting, ETH Zurich
2012	International workshop on Advanced Porous Materials, Zurich
2011	1st Swiss Heterogeneous Catalysis meeting, Grindelwald, Switzerland

Memberships
Royal Society of Chemistry | American Chemical Society | Swiss Chemical Society | Dechema | American Institute of Chemical Engineers

Languages
Spanish (native) | English, Catalan (fluent) | German (conversational) | Norwegian, Dutch (notions)

Hobbies
Tennis | Motorbikes | Anthropology | Art

List of Publications and Patents

Peer-Reviewed Publications in Scientific Journals

Reactivity and mechanism of recoverable Pd1@C3N4 single-atom catalyst in Buchwald-Hartwig aminations, G. Giannakakis, M.-E. Usteri, A. Bugaev, A. Ruiz-Ferrando, D. Faust Akl, N. Lopez, S. Fantasia, K. Püntener, J. Pérez-Ramírez, S. Mitchell, *ACS Catal.* **2024**, in press (doi not available)

One-tenth of the EU's sustainable biomethane coupled with carbon capture and storage can enable net-zero ammonia production, R. Istrate, A. Nabera, J. Pérez-Ramírez, G. Guillén-Gosálbez, *One Earth* **2024**, in press (doi:10.1016/j.oneear.2024.11.005)

The role of metal nanostructure in ceria supported catalysts for ammonia oxidation to nitrous oxide, I. Surin, Q. Yang, F. Krumeich, M. Agrachev, T. Otroshchenko, V.A. Kondratenko, E.V. Kondratenko, J. Pérez-Ramírez, *Chem Catal.* **2024**, 5, 101165 (doi:10.1016/j.checat.2024.101165)

Precise size determination of supported catalyst nanoparticles via generative AI and scanning transmission electron microscopy, H. Eliasson, A. Lothian, I. Surin, S. Mitchell, J. Pérez-Ramírez, R. Erni, *Small Methods* **2024**, 2401108 (doi:10.1002/smtd.202401108)

CO_2 electroreduction to long-chain hydrocarbons on cobalt catalysts, P. Preikschas, J. Zhang, R.R. Seemakurthi, Z. Lian, A.J. Martín, S. Xi, F. Krumeich, H. Ma, Y. Zhou, N. López, B.S. Yeo, J. Pérez-Ramírez, *Adv. Energy Mater.* **2024**, in press (doi:10.1002/aenm.202401447, back cover)

Electron paramagnetic resonance spectroscopy for the analysis of single-atom catalysts, M. Agrachev, V. Giulimondi, I. Surin, S. Mitchell, G. Jeschke, J. Pérez-Ramírez, *Chem Catal.* **2024**, 4, 101136 (doi:10.1016/j.checat.2024.101136)

Prospects of n-butanol production from carbon dioxide via ethanol dimerization, C.H. Vo, J. Pérez-Ramírez, S. Farooq, I.A. Karimi, *ACS Sustain. Chem. Eng.* **2024**, 12, 14459-14471 (doi:10.1021/acssuschemeng.4c04769)

Design principles of catalytic materials for CO_2 hydrogenation to methanol, T. Pinheiro Araújo, S. Mitchell, J. Pérez-Ramírez, *Adv. Mater.* **2024**, 36, 2409322 (doi:10.1002/adma.202409322, frontispiece)

Convergent active site evolution in platinum single atom catalysts for acetylene hydrochlorination and implications for toxicity minimization, V. Giulimondi, M. Vanni, S. Damir, T. Zou, S. Mitchell, F. Krumeich, A. Ruiz-Ferrando, N. López, J.J. Gata-Cuesta, G. Guillén-Gosálbez, J.J. Smit, P. Johnston, J. Pérez-Ramírez, *ACS Catal.* **2024**, 14, 13652-13664 (doi:10.1021/acscatal.4c03533, supplementary cover)

Environmental benefits of circular ethylene production from polymer waste, C. Salah, R. Istrate, A. Bjørn, V. Tulus, J. Pérez-Ramírez, G. Guillén-Gosálbez, *ACS Sustain. Chem. Eng.* **2024**, 12, 13897-13906 (doi:10.1021/acssuschemeng.4c04241)

Mechanochemically-derived iron atoms on defective boron nitride for stable propylene production, G.M. Beshara, I. Surin, M. Agrachev, H. Eliasson, T. Otroshchenko, F. Krumeich, R. Erni, E.V. Kondratenko, J. Pérez-Ramírez, *EES Catal.* **2024**, 2, 1263-1276 (doi:10.1039/D4EY00123K, front cover)

Understanding and controlling reactivity patterns of $Pd_1@C_3N_4$-catalyzed Suzuki-Miyaura couplings, M.E. Usteri, G. Giannakakis, A. Bugaev, J. Pérez-Ramírez, S. Mitchell, *ACS Catal.* **2024**, 14, 12635-12646 (doi:10.1021/acscatal.4c03531)

Assessment of transport phenomena in catalyst effectiveness for chemical polyolefin recycling, S.D. Jaydev, A.J. Martín, D. Garcia, K. Chikri, J. Pérez-Ramírez, *Nat. Chem. Eng.* **2024**, 1, 565-575 (doi:10.1038/s44286-024-00108-3, front cover)

Active learning streamlines development of high performance catalysts for higher alcohol synthesis, M. Suvarna, T. Zou, S.H. Chong, Y. Ge, A.J. Martín, J. Pérez-Ramírez, *Nat. Commun.* **2024**, 15, 5844 (doi:10.1038/s41467-024-50215-1)

The need to integrate mass- and energy-based metrics with life cycle impacts for sustainable chemicals manufacture, E. Lucas, A.J. Martín, S. Mitchell, A. Nabera, L.F. Santos, J. Pérez-Ramírez, G. Guillén-Gosálbez, *Green Chem.* **2024**, 26, 9300-9309 (doi:10.1039/D4GC00394B, front cover)

Technology readiness and emerging prospects of coupled catalytic reactions for sustainable chemical value chains, P. Preikschas, J. Pérez-Ramírez, *ChemSusChem* **2024**, e202400865 (doi:10.1002/cssc.202400865)

Defective zirconia promotes monometallic iron catalysts for higher alcohol synthesis, Y. Ge, T. Zou, A.J. Martín, T. Block, R. Pöttgen, J. Pérez-Ramírez, *Chem Catal.* **2024**, 4, 101010 (doi:10.1016/j.checat.2024.101010)

Integrating climate policies in the sustainability analysis of green chemicals, A. Nabera, A.J. Martín, R. Istrate, J. Pérez-Ramírez, G. Guillén-Gosálbez, *Green Chem.* **2024**, 26, 6461-6469 (doi:10.1039/D4GC00392F)

Low-nuclearity CuZn ensembles on $ZnZrO_x$ catalyze methanol synthesis from CO_2, T. Pinheiro Araújo, G. Giannakakis, J. Morales-Vidal, M. Agrachev, Z. Ruiz-Bernal, P. Preikschas, T. Zou, F. Krumeich, P.O. Willi, W.J. Stark, R.N. Grass, G. Jeschke, S. Mitchell, N. López, J. Pérez-Ramírez, *Nat. Commun.* **2024**, 15, 3101 (doi:10.1038/s41467-024-47447-6)

Droplet-based microfluidics reveals insights into cross-coupling mechanisms over single-atom heterogeneous catalysts, T. Moragues, G. Giannakakis, A. Ruiz-Ferrando, C.N. Borca, T. Huthwelker, A. Bugaev, A.J. deMello, J. Pérez-Ramírez, S. Mitchell, *Angew. Chem. Int. Ed.* **2024**, 63, e202401056 (doi:10.1002/anie.202401056, front cover)

The future of chemical sciences is sustainable, S. Mitchell, A.J. Martín, G. Guillén-Gosálbez, J. Pérez-Ramírez, *Angew. Chem. Int. Ed.* **2024**, 63, e202318676 (doi:10.1002/anie.202318676, back cover)

CO cofeeding affects product distribution in CH_3Cl coupling over ZSM-5 zeolite: pressure twists the plot, Z. Zhang, M. Vanni, X. Wu, P. Hemberger, A. Bodi, S. Mitchell, J. Pérez-Ramírez, *Angew. Chem. Int. Ed.* **2024**, 63, e202401060 (doi:10.1002/anie.202401060)

Embracing data science in catalysis research, M. Suvarna, J. Pérez-Ramírez, *Nat. Catal.* **2024**, 7, 624-635 (doi:10.1038/s41929-024-01150-3, front cover)

Active learning based guided synthesis of engineered biochar for CO_2 capture, X. Yuan, M. Suvarna, J.Y. Lim, J. Pérez-Ramírez, X. Wang, Y.S. Ok, *Environ. Sci. Technol.* **2024**, 58, 6628−6636 (doi:10.1021/acs.est.3c10922, front cover)

Design of technical ZnO/ZrO_2 catalysts for CO_2 hydrogenation to green methanol, T. Zou, T. Pinheiro Araújo, M. Agrachev, X. Jin, F. Krumeich, G. Jeschke, S. Mitchell, J. Pérez-Ramírez, *J. Catal.* **2024**, 430, 115344 (doi:10.1016/j.jcat.2024.115344)

Consumer grade polyethylene recycling via hydrogenolysis on ultrafine supported ruthenium nanoparticles, S.D. Jaydev, A.J. Martín, M.E. Usteri, K. Chikri, H. Eliasson, R. Erni, J. Pérez-Ramírez, *Angew. Chem. Int. Ed.* **2024**, 63, e202317526 (doi:10.1002/anie.202317526, back cover)

CO_2 electroreduction to syngas with tunable composition in an artificial leaf, F.L.P. Veenstra, T. Cibaka, A.J. Martín, D. Weigand, J. Kirchhoff, V. Smirnov, T. Merdzhanova, J. Pérez-Ramírez, *ChemSusChem* **2024**, 17, e202400133 (doi:10.1002/cssc.202301398, front cover)

Quantitative description of metal center organization and interactions in single atom catalysts, K. Rossi, A. Ruiz-Ferrando, D. Faust Akl, V. Gimenez Abalos, J. Heras-Domingo, R. Graux, X. Hai, J. Lu, D. Garcia-Gasulla, N. López, J. Pérez-Ramírez, S. Mitchell, *Adv. Mater.* **2024**, 36, 2307991 (doi:10.1002/adma.202307991, frontispiece)

Transcending scales in catalysis for sustainable development, S. Mitchell, A.J. Martín, J. Pérez-Ramírez, *Nat. Chem. Eng.* **2024**, 1, 13-15 (doi:10.1038/s44286-023-00005-1)

Language models and protocol standardization guidelines for accelerating synthesis planning in heterogeneous catalysis, M. Suvarna, A.C. Vaucher, S. Mitchell, T. Laino, J. Pérez-Ramírez, *Nat. Commun.* **2023**, 14, 7964 (doi:10.1038/s41467-023-43836-5)

Lattice-stabilized chromium atoms on ceria for N_2O synthesis, Q. Yang, I. Surin, J. Geiger, H. Eliasson, M. Agrachev, V.A. Kondratenko, A. Zanina, F. Krumeich, G. Jeschke, R. Erni, E.V. Kondratenko, N. Lopez, J. Pérez-Ramírez, *ACS Catal.* **2023**, 13, 15977-15990 (doi:10.1021/acscatal.3c04463)

Reaction environment design for multigram synthesis via Sonogashira coupling over heterogeneous palladium single-atom catalysts, D. Poier, D. Faust Akl, E. Lucas, A. Rodrigues Machado, G. Giannakakis, S. Mitchell, G. Guillén-Gosálbez, R. Marti, J. Pérez-Ramírez, *ACS Sustain. Chem. Eng.* **2023**, 11, 16935-16945 (doi:10.1021/acssuschemeng.3c04183)

Direct electroreduction of carbonate to formate, H. Ma, E. Ibáñez-Alé, R. Ganganahalli, J. Pérez-Ramírez, N. Lopez, B.S. Yeo, *J. Am. Chem. Soc.* **2023**, 145, 24707-24716 (doi:10.1021/jacs.3c08079)

Evidence of bifunctionality of carbons and metal atoms in catalyzed acetylene hydrochlorination, V. Giulimondi, A. Ruiz-Ferrando, G. Giannakakis, I. Surin, M. Agrachev, G. Jeschke, F. Krumeich, N. López, A.H. Clark, J. Pérez-Ramírez, *Nat. Commun.* **2023**, 14, 5557 (doi:10.1038/s41467-023-41344-0)

Geminal atom catalysis for cross-coupling, X. Hai, Y. Zheng, Q. Yu, N. Guo, S. Xi, X. Zhao, S. Mitchell, X. Luo, V. Tulus, M. Wang, X. Sheng, L. Ren, X. Long, J. Li, P. He, H. Lin, Y. Cui, X. Peng, J. Shi, J. Wu, C. Zhang, R. Zou, G. Guillén-Gosálbez, J. Pérez-Ramírez, M. Joo Koh, Y. Zhu, J. Li, J. Lu, *Nature* **2023**, 622, 754 (doi:10.1038/s41586-023-06529-z)

Economic and environmental competitiveness of ethane-based technologies for vinyl chloride synthesis, J.D. Medrano-García, V. Giulimondi, A. Ceruti, G. Zichittella, J. Pérez-Ramírez, G. Guillén-Gosálbez, *ACS Sustain. Chem. Eng.* **2023**, 11, 13062 (doi:10.1021/acssuschemeng.3c03006)

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Arjun Shah, Impact of hybrid CO_2-CO feeds on methanol synthesis over In_2O_3-oxide-based catalysts, ETH Zurich, **2020**

Marion Short, Kinetic fingerprints of CO_2-based synthesis and steam reforming of methanol over heterogeneous catalysts, ETH Zurich, **2020**

Michelle Philipp, Promoter engineering of In_2O_3 catalysts for methanol production via CO_2 hydrogenation, ETH Zurich, **2019**

Gabrijel Novak, CO_2 promotion on higher alcohols synthesis from syngas over copper-iron catalysts, ETH Zurich, **2019**

Dario Faust Akl, Design of low-nuclearity metal catalysts, ETH Zurich, **2019**

Alessia Cesarini, Role of the zirconia carrier on the performance of indium oxide for CO_2 hydrogenation, ETH Zurich, **2019**

Gabriele Manzocchi, Design of noble metal-based catalysts for acetylene hydrochlorination, ETH Zurich, **2019**

Klara S. Key, Pd promoted In_2O_3 catalysts for the direct CO_2 hydrogenation to methanol, ETH Zurich, **2018**

Florian Goedicke, Mechanistic understanding of selectivity patterns in ethane oxyhalogenation, ETH Zurich, **2018**

Bittor A. Markaide-Aiastui, Catalysts for the selective hydrodechlorination of dichloromethane in natural gas upgrading, ETH Zurich, **2018**

Sebastiano D'Angelo, Techno-economic analysis of a glycerol biorefinery, ETH Zurich, **2018**

Nicolas Aellen, Olefins from natural gas via oxychlorination catalysis: from active phase to technical body, ETH Zurich, **2017**

Tim Forster, Higher alcohols synthesis via carbon nanofibers-supported KCoMo catalysts: impact of carriers, catalyst synthesis, and activation, ETH Zurich, **2017**

Giorgio Pastore, Glycerol valorization: towards sustainable bio-refinery processes, ETH Zurich, **2017**

Moritz Haus, Sustainable polyurethane precursors through the development of post-empirical models based on mechanistic insights, ETH Zurich, **2016**

Matthias S. Frei, Production of acrylic acid from lactic acid on alkaline activated zeolites, ETH Zurich, **2015**

Matthias Scharfe, Stable cerium-based catalysts for the oxychlorination of ethylene, ETH Zurich, **2015**

Guido Zichittella, Oxybromination of methane over vanadium phosphate catalysts: a novel route for selective methane upgrading, ETH Zurich, **2015**

Patrick Dähler, Performance of doped ceria catalysts in alkyne hydrogenation, ETH Zurich, **2014**

Kartikeya Desai, Design of basic zeolite catalysts by alkaline activation in alcoholic media and the application in bio-oil deoxygenation, ETH Zurich, **2014**

Isabella Giovinazzo, Production of lactic acid and alkyl lactates over Sn-containing MFI zeolites: from batch to continuous operation, ETH Zurich, **2014**

Anna Beltzung, Design of hierarchical zeolites for the synthesis of methylenedianiline mixtures, ETH Zurich, **2013**

Stéphane Isabettini, Design of hierarchical silica-rich zeolite base catalysts, ETH Zurich, **2013**

Laura Rodríguez-García, Catalysts and hybrid fixed-bed reactors for the gas-phase oxidation of hydrogen halides, ETH Zurich, **2013**

Tobias Keller, Superior base catalysis through hierarchical faujasite zeolites, ETH Zurich, **2012**

Martin Menart, Hierarchical zeolites as efficient catalysts for the conversion of dihydroxyacetone to alkyl lactates, ETH Zurich, **2012**

Tazawa Atsushi, Development of IrO_2-based catalysts in technical form for the gas-phase HCl oxidation, ETH Zurich, **2012**

Jonas Wichert, Selective hydrogenation of acetylene over ceria-based catalysts, ETH Zurich, **2012**

Maximilian Moser, Micro kinetic studies and modeling of the hydrogen chloride oxidation on ceria catalysts, ETH Zurich, **2011**

Gianvito Vilé, Hierarchical zeolite Y and USY obtained by strategic combinations of post-synthetic modifications, ETH Zurich, **2011**

Research Projects

Amir Zholdasbekov, ongoing, ETH Zurich, **2024**

Tobias Heinrich, ongoing, ETH Zurich, **2024**

Pit Hoffmann, ongoing, ETH Zurich, **2024**

Xiaoyu Jin, ZnO/ZrO_2 catalysts prepared by wet impregnation for CO_2 hydrogenation to methanol, ETH Zurich, **2023**

Wiktoria Wnętkowska, Electrochemical CO_2 conversion toward long-chain hydrocarbons, ETH Zurich, **2023**.

Suyash Damir, Ceria-supported transition metal oxides as catalysts for nitrous oxide production via ammonia oxidation, ETH Zurich, **2022**

Georgios Marnieros, Exploring oxide layers as modifiers of copper electrocatalyts in CO_2 reduction, ETH Zurich, **2022**

Clemens Wöllhaf, Host effects in palladium single-atom catalysts for alkyne semi hydrogenations, ETH Zurich, **2021**

Optimization of gold on CeO_2 for single-step production of nitrous oxide via ammonia oxidation, Asbjörn Rasmussen, ETH Zurich, **2021**

Ivan Surin, Gold supported in ceria as a superior catalyst for nitrous oxide production via direct ammonia oxidation, ETH Zurich, **2021**

Lucrezia Cartocci, Carbon-supported gold-based catalysts for acetylene hydrochlorination, ETH Zurich, **2020**

Samuel Scheiber, Enhanced higher alcohols synthesis via cascade byproduct upgrading over zeolites, ETH Zurich, **2019**

James Luethi, Alkane functionalization via catalytic oxychlorination: performance as a function of the carbon number, ETH Zurich, **2019**

Oliver Stiz, Design of nickel single-atom catalysts on heteroatom-doped carbons, ETH Zurich, **2019**

Louisa Buttsworth, Impact of carrier acidity in the conversion of syngas to higher alcohols on zeolite-supported copper-iron catalysts, ETH Zurich, **2019**

Kevin Kleemann, Structure-performance relationship of silica-supported transition metal catalysts in the hydrodebromination of dibromomethane, ETH Zurich, **2019**

Lorenz Olbrich, Nanostructured ceria catalysts for ethylene oxychlorination, ETH Zurich, **2019**

Samuel Stähelin, Selective propane-to-propylene via catalyzed oxychlorination over metal phosphates, ETH Zurich, **2019**

Nicola Carrara, Selective alkane oxyhalogenation over supported metal nanoparticles, ETH Zurich, **2018**

Igor Rombaut, Direct higher alcohol synthesis from syngas over copper-iron based catalysts, ETH Zurich, **2018**

Agostino Dall'Ara, Capital cost estimation for the production of glycerol carbonate and 1,2-propanediol using the Guthrie method, ETH Zurich, **2018**

Kevin Zeiter, Investigation of sulfur-modified transition metals for CO_2 reduction, ETH Zurich, **2018**

Martín Artusi, Methane activation through catalytic oxybromination, ETH Zurich, **2018**

Bharath Tata, Selective oxychlorination of ethylene to vinyl chloride, ETH Zurich, **2017**

Dragona Ristanovic, Modelling of the methane oxybromination, ETH Zurich, **2016**

Doohyun Hwang, Higher alcohol synthesis from syngas over carbon-supported CoMo catalysts, ETH Zurich, **2016**

Arthur Brucoli Leme de Moura, Carbonation of glycerol with urea in continuous mode catalyzed by magnesium-aluminum mixed oxides, ETH Zurich, **2016**

Nicolas Aellen, Comparative study of oxybromination and oxychlorination of methane over metal oxide, phosphate and vanadate catalysts, ETH Zurich, **2016**

Lukas Weimann, Towards the continuous carbonation of glycerol with urea, ETH Zurich, **2016**

Rohan Murty, New insights into the pore development mechanism of layered hydroxides upon thermal activation, ETH Zurich, **2016**

Moritz Haus, Finding new applications for the Nanoselect^{TM} catalyst family: conversion of nitriles and aldehydes in a continuous flow reactor, ETH Zurich, **2015**

Ali Saadun, Stability of metallated zeolites in biomass conversion in continuous flow conditions and the development of bifunctional zeolite catalysts for the oxidehydration of glycerol, ETH Zurich, **2015**

Fabian Brüning, Influence of the composition of an industrial catalyst on CO_2-promoted methanol synthesis, ETH Zurich, **2014**

Sarah Correa, Hybrid nanocatalysts for selective hydrogenation of nitroarenes, ETH Zurich, **2014**

Kartikeya Desai, Basic zeolite catalysts for the catalytic deoxygenations of bio-oil, ETH Zurich, **2014**

Matthias Frei, Synthesis and evaluation of Tin containing BEA, FAU, MOR prepared by alkaline assisted stannation, ETH Zurich, **2014**

Olivier Gröninger, Production of mannitol from glucose over epimerization-hydrogenation, ETH Zurich, **2014**

Stefan Reuteler, Insights into the alkaline-assisted metallation process: Location of the active Lewis-acid sites in sugars isomerization, ETH Zurich, **2014**

Sotiria Mostrou, Performance of metal oxide catalysts for bromine recycling, ETH Zurich, **2014**

Gabriele Colombo, Bio-oil upgrading by condensation reactions: Performance of zeolite catalysts in the esterification of acetic acid, ETH Zurich, **2013**

Oliver Ingold, Room-temperature synthesis of metal-organic frameworks from layered double hydroxides, ETH Zurich, **2013**

Jakub Jagielski, A rational approach to the synthesis of the Lindlar catalyst, ETH Zurich, **2013**

Leonard Floryan, Chemo- and Stereoselective Behavior of CeO_2-Based Catalysts for Liquid-Phase Partial Hydrogenation of Alkynes, ETH Zurich, **2013**

Patrick Dähler, Promoted ceria catalysts for alkyne semi-hydrogenation, ETH Zurich, **2012**

Thomas Soltermann, Development of kinetic tools for the investigation of the CO_2 promotion, ETH Zurich, **2012**

Mario Stucki, Chemo-catalytic conversion of biomass to chemicals, ETH Zurich, **2012**

Jose Zhao, Impact of extrusion with silica, alumina, and natural clays on the intrinsic properties of desilicated ZSM-5, ETH Zurich, **2012**

Gastón Larrazábal, $CuCrO_2$-CeO_2 composite for the oxidation of HCl to Cl_2, ETH Zurich, **2012**

Johan Mendez, Hierarchical ZSM-5 zeolites in liquid-phase alkylation of toluene with isopropanol, ETH Zurich, **2012**

Zair Dominguez Trinidad, Catalytic Performance of Hierarchical ZSM-5 Zeolites for Liquid Phase Alkylation, ETH Zurich, **2011**

Maximilian Moser, CeO_2/ZrO_2 catalysts for sustainable hydrogen chloride oxidation, ETH Zurich, **2011**

Mrugendra Kamtikar, Novel approaches for desilication of zeolites, Institute of Chemical Research of Catalonia, Tarragona, Spain, **2008**

Danny Verboekend, Novel catalysts for the selective hydrogenation of triple bonds, Institute of Chemical Research of Catalonia, Tarragona, Spain, **2007**

Ripudaman Manchanda, Memory effect of dawsonite-derived aluminas, Institute of Chemical Research of Catalonia, Tarragona, Spain, **2007**

Vijay Shankar, Reusability and scalability of solid-base catalysts in C-C bond formation reactions, Institute of Chemical Research of Catalonia, Tarragona, Spain, **2007**

Saurabh Dhir, Kinetic analysis of the aldol condensation of citral and acetone over activated hydrotalcites, Institute of Chemical Research of Catalonia, Tarragona, Spain, **2006**

Olga Sánchez Galofré, In situ DRIFTS study of the N_2O-mediated oxidative dehydrogenation of propane, Institute of Chemical Research of Catalonia, **2006**

Lluís Maldonado, Redistribution of iron species in FeZSM-5 upon treatment in alkaline media, Institute of Chemical Research of Catalonia, Tarragona, Spain, **2005**

Key Projects as Program Director

2020 – 2024 NCCR Catalysis, Swiss National Science Foundation. 8 Swiss institutions, >40 principal investigators, >150 students and researchers

2019 – 2022 Flagship Green Energy Program, National University of Singapore. 19 principal investigators, 20 research fellows

Selected Projects as Principal Investigator

2024 – 2028 National Center of Competence in Research, Sustainable chemical processes through catalysis, Swiss National Science Foundation

2021 – 2023 Heterogeneous single-atom catalysis for C-N coupling applications, Roche, Switzerland

2021 – 2024 Catalytic systems for hydrogenolysis-based upcycling of plastic waste, ETH Zurich

2020 – 2024 National Center of Competence in Research, Sustainable chemical processes through catalysis, Swiss National Science Foundation

2020 – 2022 Application of machine learning to catalyst design for CO_2 to methanol, TOTAL Raffinage Chimie, Belgium

2019 – 2022 Microstructured electrocatalysts as a design platform for decentralized ammonia synthesis and carbon dioxide fixation in artificial leaves, ETH Zurich

2019 – 2020 ENERGY-X, Horizon 2020, European Union

2018 – 2021 Catalyst design for the reforming of halomethanes in natural gas upgrading, ETH Zurich

2017 – 2020 Design of acetylene hydrochlorination catalysts for sustainable PVC production, ETH Zurich

2017 – 2020 An artificial leaf: a photo-electro-catalytic cell, European Research Council

2017 – 2018 Heterogeneous single-atom catalysts for Suzuki coupling, Idorsia, Switzerland

2016 – 2019 Doing more with less: efficient single-atom catalysts based on carbon nitride for sustainable chemical transformations, Swiss National Science Foundation

2016 – 2020 Insight into In_2O_3-based catalysts for methanol synthesis, TOTAL Raffinage Chimie, Belgium

2016 – 2019 Novel zeolite catalysts for continuous selective acylation reactions and design of continuous heterogeneously-catalyzed process for acylation reactions in vitamin synthesis for vitamins A and E, DSM Nutritional Products AG, Switzerland

2016 – 2019 Gas to value: halogen-mediated catalytic processes for natural gas conversion to chemicals, ETH Zurich

2015 – 2019 Heavy alcohols synthesis, TOTAL Raffinage Chimie, Belgium

2015 – 2020 Heterogeneous catalysts for urethane synthesis via amines and dialkyl carbonates, Covestro AG, Germany

2015 – 2018 Polymer building blocks from bio-derived feedstocks, Swiss National Science Foundation

2015 – 2016 MDA synthesis over ASA catalysts, Covestro AG, Germany

2015 – 2016 Advanced catalyst engineering with positron annihilation spectroscopy, ETH Zurich

2014 – 2017 Design of oxyhalogenation catalysts for hydrocarbon functionalization, Swiss National Science Foundation

2014 – 2016 Methanol synthesis, TOTAL Raffinage Chimie, Belgium

2014 – 2016 Styrene production over zeolite-based catalysts, thyssenkrupp Industrial Solutions, Germany

2014 – 2016 Swiss Competence Center for Energy Research, Biomass for Swiss Energy Future, Commission for Technology and Innovation, Switzerland

2014 – 2017 Design of electrocatalysts for the conversion of CO_2 into valuable chemicals, ETH Zurich

2013 – 2017	Cascade deoxygenation process using tailored nanocatalysts for the production of biofuels from lignocellullosic biomass, Seventh Framework Programme, European Union
2012 – 2015	Enabling new sustainable applications of zeolite catalysts through hierarchical structuring, ETH Zurich
2012 – 2014	CO_2-based products – From dream to reality, EIT Climate-KIC, European Union
2012 – 2014	Biomass to chemicals over tailored hierarchical zeolite-based catalysts, Swiss National Science Foundation
2011 – 2014	A fundamental approach to the scale up of hierarchical zeolite catalysts, Swiss National Science Foundation
2011 – 2012	Mesoporous ZSM-5 zeolites, Zeochem, Switzerland
2011 – 2012	The catalytic conversion of methanol to olefins over desilicated ZSM-5 zeolites, BASF, Germany
2010 – 2013	Chemicals on methanol synthesis, TOTAL Energy Development, France
2007 – 2009	Rational design of efficient catalytic processes through an improved mechanistic understanding. Development and application of time-resolved transient methodologies, Spanish Ministry for Education and Science
2006 – 2013	Catalyst design for sustainable chemistry: an integrated approach, Consolider Ingenio, Spanish Ministry for Education and Science, Germany
2006 – 2009	Modeling of catalytic oxidation of ammonia in a gauze reactor, Yara International, Norway
2006	Gold catalysts for acetylene semi-hydrogenation, BASF, Germany
2005 – 2007	Modeling of catalytic oxidation of ammonia in a gauze reactor, Yara International, Norway
2005 – 2007	Towards optimized chemical processes and new materials by combinatorial science, Sixth framework programme, European Union

Selected Lectures

Plenary Lectures

Design of reducible oxide catalysts for green methanol synthesis, 13th Natural Gas Conversion Symposium, Xiamen, China, 24th April **2024**

Catalysis and sustainability: a journey from atom to planet, Europacat 2023, Prague, Czech Republic, 31st August **2023**

Catalysis as a driver for sustainable chemistry, SECAT'2023, Málaga, Spain 21st June **2023**

Sustainability driven catalysis engineering, UK Catalysis Conference, Loughborough, United Kingdom, 5th January **2023**

Sustainability driven catalysis engineering, UK Catalysis Conference, Loughborough, United Kingdom, 5th January **2023**

Halogen chemistry on catalytic surfaces, 9th World Congress on Oxidation Catalysis, Cardiff, United Kingdom, 7th September **2022**

Advancing heterogeneous catalysis via nanoscale engineering, 55th Bürgenstock Conference, Brunnen, Swizerland, 2nd May **2022**

Frontiers in catalysis engineering for sustainable technologies, 4th EuCheMS Conference on Green and Sustainable Chemistry, Tarragona, Spain, 24th September **2019**

Catalysis engineering for sustainable technologies, 20th Brazilian Catalysis Conference, São Paulo, Brazil, 4th September **2019**

Frontiers in catalysis engineering for sustainable technologies, 26th North American Catalysis Society, Chicago, US, 25th June **2019**

Catalysis engineering for sustainable technologies, 2nd Trans-Pyrenean Meeting in Catalysis, Tarragona, Spain, 19th October **2018**

Design of heterogeneous catalysts for sustainable technologies, 4th International Symposium on the Catalysis for Clean Energy and Sustainable Chemistry, Bilbao, Spain, 9th July **2018**

Zeolites as enablers for sustainable technologies, 19th Chinese Zeolite Conference, Wuhan, China, 25th October **2017**

Discovery and design of catalysts for sustainable technologies, 1st European Conference on Plasma Catalysis for CO_2 Valorization and Green Chemistry, Paris, France, 6th September **2017**

Discovery and design of catalysts for sustainable technologies, 49. Polish Annual Conference on Catalysis, Cracow, Poland, 17th March **2017**

Towards the design of heterogeneous catalysts for sustainable technologies, XVIII Porotec Workshop, Bad Soden, Germany, 8th November **2016**

Towards the design of heterogeneous catalysts for sustainable technologies, Innovative Catalytic Technologies in Chemistry, Petrochemistry and Oil Refining, Saint Petersburg, Russia, 21st October **2016**

Halogen chemistry on catalytic surfaces, X International Conference Mechanisms of Catalytic Reactions, Svetlogorsk, Russia, 3rd October **2016**

Quality of pore networks in hierarchical zeolites, 2nd Workshop: Hierarchically-ordered Materials: From Theory to Applications, Erlangen, Germany, 28th September **2016**

Halogen chemistry on ceria and related materials, Symposium on Fundamentals and Applications of Cerium Oxide in Catalysis, Beijing, 2nd July **2016**

Towards the design of heterogeneous catalysts for sustainable technologies, 4th Indo French Symposium, Villeneuve d'Ascq, France, 27th June **2016**

Catalyst and process design for glycerol valorization to commodities, Catalysis applied to biomass – toward sustainable processes and chemicals, Compiègne, France, 9th March **2016**

Design of hierarchically organized zeolite catalysts, 6th International Symposium Advanced Micro- and Mesoporous Materials, Burgas, Bulgaria, 7th September **2015**

Design of hierarchically organized zeolite catalysts, Massachusetts Institute of Technology, Cambridge MA, US, 27th August **2015**

Expanding the horizons of ceria in oxidation and hydrogenation catalysis, Workshop of CeO_2-based Materials in Catalysis and Electrochemistry, Rauischholzhausen, 27th July **2015**

Are we able to design heterogeneous catalysts?, SECAT'15, Barcelona, Spain, 15th July **2015**

Design of hierarchically organized zeolite catalysts, Southeast Asia Catalysis Conference, Singapore, 15th May **2015**

Glycerol to commodities via chemocatalytic routes, International Symposium on Green Chemistry, La Rochelle, France, 5th May **2015**

Design of hierarchical zeolite catalysts – Where pore and active site quality meet, 6th EAM Symposium, Kloster Banz, Bad Staffelstein, Germany, 25th November **2014**

New catalytic processes for halogen recycling, NIOK/KNAW symposium – Catalysis for the future, 12th November **2014**

Design of hierarchical zeolite catalysts: where pore and active site quality meet, 6th FEZA conference, Leipzig, Germany, 11th September **2014**

Design of hierarchical zeolite catalysts, FEZA pre-school, FEZA-Pre-School: Hierarchically-ordered Materials: From Theory to Applications, Lichtenfels, Germany, 7th September **2014**

Revitalizing the chemical industry by catalyst design, 1st Centennial Shell Catalysis Conference, Amsterdam, the Netherlands, 22nd May **2014**

Design of hierarchical zeolite catalysts – Where pore and active site quality meet, 37th Meeting of the British Zeolite Association, Glasgow, UK, 11th April **2014**

New catalytic processes for halogen recycling, NCCC XV – The Netherlands' Catalysis and Chemistry Conference, Noordwijkerhout, the Netherlands, 11th March **2014**

Catalytic processes for halogen recycling, Slonano, Ljubljana, Slovenia, 23rd October **2013**

Deacon chemistry revisited – New catalytic processes for chlorine recycling, Frontiers in chemical reaction engineering, Ghent, Belgium, 25th June **2013**

Deacon chemistry revisited: new catalytic processes for chlorine recycling, 46. Jahrestreffen Deutscher Katalytiker, Weimar, Germany, 13th March **2013**

Engineering of hierarchical zeolite catalysts, Jahrestreffen Reaktionstechnik, Würzburg, Germany, 16th May **2012**

Hierarchical zeolites by demetallation, School of Molecular Sieves, Prague, Czech Republic, 2nd April **2012**

Design of hierarchical zeolite catalysts, Royal Society of Chemistry SURCAT meeting, London, UK, 9th December **2011**

Scale up of hierarchical porous zeolites – Science fiction or science reality?, 23. Deutsche Zeolithe Tagung, Erlangen, Germany, 4th March **2011**

Engineering of hierarchical zeolite catalysts, 23rd Entretiens Jacques Cartier, Lyon, France, 22nd November **2010**

Chlorine recycling via catalyzed HCl oxidation: from fundamentals to implementation, Frontiers in Heterogeneous Catalysis, Garching, Germany, 23rd October **2010**

Demand more on your catalyst – Design of hierarchical zeolites, IDECAT conference on catalysis, Porquerolles, France, 22nd May **2009**

Demand more on your catalyst – Design of hierarchical zeolites, French Group of Zeolites, Port-Bail, France, 1st April **2009**

Keynote Lectures

Catalysis as a driver for sustainable chemistry, IUPAC World Chemistry Congress, The Hague, Netherlands, 21st August **2023**

Catalysis as a driver for sustainable chemistry, International Conference of the Cluster of Excellence 'The Fuel Science Center', 23rd May **2023**

Advanced catalysis via nanoscale engineering, TOCAT9, Fukuoka, Japan, 28th July **2022**

Frontiers in catalyst design for sustainable technologies, Workshop: SHINE - Sunshine into New Energy, National University of Singapore, Singapore, 2nd August **2019**

Analysis of pore quality in hierarchical zeolite catalysts, 19th International Zeolite Conference, Perth, Australia, 9th July **1019**

Halogen-mediated catalytic processes for natural gas upgrading, 12th Natural Gas Conversion Symposium, San Antonio, US, 4th June **2019**

Catalysis engineering for sustainable technologies, 14. Freiburger Symposium Industrial and Applied Chemistry, School of Engineering & Architecture of Fribourg, Switzerland, 17th May **2019**

Catalysis engineering for sustainable technologies, Annual meeting of the Sustainable Chemistry division of the German Chemical Society, RWTH Aachen, Germany, 18th September **2018**

Catalysis engineering for sustainable technologies, Sunshine in a barrel – next generation green energy, National University of Singapore, 26th March **2018**

Towards catalyst design for CO_2 valorization, Nature Conference on Materials Electrochemistry: Fundamentals and Applications, Shenzhen, China, 13th January **2018**

Catalytic technologies towards the glycerol biorefinery, 46th World Chemistry Congress, São Paolo, Brazil, 11th July **2017**

Design of stable single-atom catalysts based on graphitic carbon nitride, International Symposium on Single-Atom Catalysis, Dalian, China, 1st July **2016**

Hybrid nanostructured catalysts for selective hydrogenation, Third International Conference on Advanced Complex Inorganic Nanomaterials, Namur, Belgium, 13th July **2015**

New applications of CeO_2 in oxidation and hydrogenation catalysis, Fundamentals and Applications of Ceria in Catalysis, Udine, Italy, 13th July **2014**

Design of hierarchical zeolite catalysts, Tailor-Made Fuels from Biomass, Aachen, Germany, 16th June **2014**

Catalytic processes for halogen recycling, TOCAT7, Kyoto, Japan, 5th June **2014**

Sustainable chlorine recycling via HCl oxidation, 8th European Congress on Chemical Engineering, Berlin, Germany, 28th September **2011**

Control of N_2O emissions in industry – Catalysts and processes, 2nd International Symposium on Air Pollution Abatement Catalysis, Cracow, Poland, 9th September **2010**

Control of N_2O in industry – Overview of present technologies and challenges ahead, Fifth International Symposium on Non-CO_2 Greenhouse Gases, NCGG5, Wageningen, the Netherlands, 30th June **2009**

Hierarchical zeolites – The engineering starts in the pore, Europacat VIII, Turku, Finland, 30th August **2007**

New catalytic processes for chlorine recovery – From fundamentals to implementation, Europacat X, Glasgow, UK, 30th August **2011**

Perovskites membranes in ammonia oxidation – Opportunities for pocket-sized nitric acid plants, 2nd International Conference on Structured Catalysts and Reactors, Delft, the Netherlands, 2nd October **2005**

Control of N_2O emissions in the chemical industry, ourth International Symposium on Non-CO_2 Greenhouse Gases, NCGG4, Utrecht, the Netherlands, 5th July **2005**

N_2O abatement – Low vs high temperature catalysis, 4th International Conference on Environmental Catalysis, Heidelberg, Germany, 8th June **2005**

Invited Lectures

Sustainable vinyl chloride synthesis, Beijing University, China, 14th November **2024**

Design of reducible oxide catalysts for green methanol synthesis, Beijing University, China, 13th November **2024**

Catalysis and sustainability: a journey from atom to planet, Beijing University, China, 13th November **2024**

Catalysis as a driver for sustainable chemistry, Feria Destaca, Vila-real, Spain, 6th November **2024**

Design of reducible oxide catalysts for green methanol synthesis, National University of Singapore, 5th September **2024**

Catalysis and sustainability: a journey from atom to planet, National University of Singapore, 3rd September **2024**

The ties that bind, Khalifa University, UAE, 27th June **2024**

Catalysis and sustainability: a journey from atom to planet, CNRS Toulouse, France, 14th May **2024**

Catalysis and sustainability: a journey from atom to planet, Shenzhen University, China, 27th April **2024**

Catalysis and sustainability: a journey from atom to planet, TotalEnergies Incubation Network Day, Paris, France, 3rd April **2024**

Catalysis and sustainability: a journey from atom to planet, Technische Universität Berlin, Germany, 31st January **2024**

Catalysis and sustainability: a journey from atom to planet, Frei Universität Berlin, Germany, 30th January **2024**

Catalysis and sustainability: a journey from atom to planet, Universitat Rovira i Virgili, Spain, 15th December **2023**

Catalysis and sustainability: a journey from atom to planet, Khalifa University, UAE, 28th November **2023**

Catalysis and sustainability: a journey from atom to planet, MIT, United States, 31st October **2023**

Catalysis as a driver for sustainable chemistry, Zhejiang NHU Co. Ltd, Xinchang, China, 7th June **2023**

Catalysis as a driver for sustainable chemistry, Institute of Chemical Technology, Valencia, Spain, 30th May **2023**

Advanced catalysis via nanoscale engineering, RWTH Aachen, Germany, 22nd May **2023**

Catalysis as a driver for sustainable chemistry, University of Stuttgart, Germany, 11th May **2023**

Catalysis as a driver for sustainable chemistry, Centre of Hydrogen Innovation Distinguished Speaker Series, National University of Singapore, 12th April **2023**

Advanced catalysis via nanoscale engineering, Technische Universität Darmstadt, Germany, 26th January **2023**

Catalysis engineering for sustainable development, Barcelona Institute of Science and Technology @ICIQ, Tarragona, Spain, 17th January **2023**

Catalysis engineering for sustainable development, Transactions of Tianjin University (Virtual), China, 22nd November **2022**

Catalysis engineering for sustainable development, Centre of Hydrogen Innovation Distinguished Speaker Series, National University of Singapore, 20th October **2022**

Catalysis engineering for sustainable development, School of Chemistry, Chemical Engineering and Biotechnology, Nanyang Technological University, Singapore, 18th October **2022**

Advanced catalysis via nanoscale engineering, Cambridge Centre for Advanced Research and Education, Singapore, 29th June **2022**

Advanced catalysis via nanoscale engineering, Department of Chemistry, Faculty of Science, National University of Singapore, Singapore, 23rd June **2022**

Advanced catalysis via nanoscale engineering, 9th Irsee Symposium, Robert K. Grasselli Foundation, Irsee, Germany, 17th June **2022**

Advanced catalysis via nanoscale engineering, John van Geuns lecture, Amsterdam University, the Netherlands, 13th September **2011**

Enhacing catalysis via nanoscale engineering, Givaudan, Kemptthal, Switzerland, 14th December **2021**

Catalysis engineering for sustainable technologies, Sulzer, Winterthur, 30th November **2021**

Nanoscale engineering for sustainable catalysis, Frontiers in Catalysis Lecture Series, Pacific Northwest National Laboratory, 14th July **2021**

Nanoscale engineering for sustainable catalysis, ChemSusChem Virtual Symposium on Green Carbon Chemistry, 8th July **2021**

Frontiers in catalyst design for sustainable technologies, Micromeritics Material Characterization Webinar, 16th July **2020**

Frontiers in catalyst design for sustainable technologies, Nanyang Technological University, Singapore, 13th February **2020**

Frontiers in catalyst design for sustainable technologies, Delft University of Technology, Netherlands, 8th January **2020**

Frontiers in catalyst design for sustainable technologies, Casale, Lugano, Switzerland, 6th December **2019**

Frontiers in catalyst design for sustainable technologies, College of Chemistry, Trinity College Dublin, Ireland, 28th November **2019**

Frontiers in catalysis engineering for sustainable technologies, Cell Symposia: Next-Generation Materials for Energy Applications, Xiamen, China, 19th November **2019**

Frontiers in catalysis design for sustainable technologies, Nature Research Round Table, Energy Materials for Sustainability: Bridging Academia and Industry, Beijing, China, 8th November **2019**

Frontiers in catalysis design for sustainable technologies, Beijing Institute of Technology, China, 7th November **2019**

Overview of the Energy-X project, Sunrise Swiss Stakeholder Workshop, Dübendorf, Switzerland, 27th September **2019**

Catalysis engineering for sustainable technologies, XXXVII Biennial Meeting of the Spanish Royal Society of Chemistry, San Sebastian, Spain, 28th May **2019**

Catalysis engineering for sustainable technologies, Seminar at the Center for Natural Sciences, Hungarian Academy of Sciences, Budapest, Hungary, 18th January **2019**

Transformative chemistry for a sustainable future, Seminar at the Universitat Rovira i Virgili, Tarragona, Spain, 11th January **2019**

Catalysis engineering for sustainable technologies, Seminar at the Bernese Chemical Society, University of Bern, Switzerland, 5th December **2018**

Catalysis engineering for sustainable technologies, Seminar at the Munich Chemical Society, Technical University of Munich, Germany, 13th November **2018**

Catalysis engineering for sustainable technologies, International Symposium on Catalysis Engineering, Delft University of Technology, the Netherlands, 27th September **2018**

Catalysis engineering for sustainable technologies, Syngenta Chemistry Lecture 2018, Stein, Switzerland, 13th September **2018**

Transformative chemistry for the energy grand challenge, Workshop 'Tackling the CO_2 challenge', National University of Singapore, 10th September **2018**

Catalysis engineering for sustainable technologies, Event 'Mitigating issues of future wastes: enhancing resource productivity in emerging technologies', Royal Society of Chemistry, Burlington House, London, 5th September, **2018**

Summer School 'Power to X: Fundamentals and Applications of Modern Electrosynthesis', Villars-sur-Ollon, Switzerland, 28th August **2018**

Catalysis engineering for sustainable technologies, Summer School 'Power to X: Fundamentals and Applications of Modern Electrosynthesis', Villars-sur-Ollon, Switzerland, 28th August **2018**

Catalysis engineering for sustainable technologies, Zhang Dayu Lectureship, Dalian Institute of Chemical Physics, China, 23rd August **2018**

Zeolites as enablers for sustainable technologies, EFCATS School on Catalysis, Liblice, Czech Republic, 26th June 2018

Catalysis engineering for sustainable technologies, Xing Da Lectureship, Peking University, China, 8th June **2018**

Propelling sustainable chemistry with catalysis, Tsinghua University, China, 6th June **2018**

Catalysis engineering for sustainable technologies, University of Fribourg, Switzerland, 11th April **2018**

Catalysis engineering for sustainable technologies, University of Oxford, UK, 12th March **2018**

Design of heterogeneous catalysts for sustainable technologies, Aston University, UK, 8th March **2018**

Propelling sustainable chemistry with catalysis, University of Aberdeen, UK, 7th March **2018**

Discovery and design of catalysts for sustainable technologies, Micromeritics Instruments, Norcross GA, 13th December **2017**

Discovery and design of catalysts for sustainable technologies, École Polytechnique Fédérale de Lausanne, Switzerland, 1st December **2017**

Discovery and design of catalysts for sustainable technologies, SUNCAT Summer Institute, Stanford University, Palo Alto CA, US, 14th August **2017**

Catalysis engineering for sustainable technologies, Micromeritics workshop on materials characterization, Hermsdorf, Germany, 26th April **2017**

Catalysis engineering for sustainable technologies, Firmenich, Geneva, Switzerland, 7th April **2017**

Discovery and design of catalysts for sustainable technologies, University of Udine, Italy, 27th March **2017**

Catalyst design and discovery for sustainable technologies, University of Ljubljana, Slovenia, 18th January **2017**

Catalyst design and discovery for sustainable technologies, University of Cambridge, UK, 2nd February **2017**

Design and discovery of heterogeneous catalysts for sustainable technologies, University of Cordoba, Spain, 22nd November **2016**

Towards the design of heterogeneous catalysts for sustainable technologies, TOTAL Research & Technology Center Feluy, Seneffe, Belgium, 4th November **2016**

Chemical innovation through catalysis engineering, Industry Day, ETH Zurich, 22nd September **2016**

Halogen chemistry on catalytic surfaces, thyssenkrupp Industrial Solutions, Dortmund, Germany 8th September **2016**

Catalyst design for bio-oil deoxygenation, CASCATBEL Workshop on Thermochemical Lignocellulose Conversion Technologies, Porto Carras, Chalkidiki, Greece, 18th May **2016**

Bringing catalysts to technical scale – New processes in polymer manufacture, SECAT Summer School, Barcelona, Spain, 16th July **2015**

Towards the design of heterogeneous catalysts for sustainable technologies, King Abdullah University of Science & Technology, Thuwal, Saudi Arabia, 20th June **2016**

Towards the design of heterogeneous catalysts for sustainable technologies, University College London, UK, 8th June **2016**

Towards the design of heterogeneous catalysts for sustainable technologies, EPFL Valais Wallis, Sion, Switzerland, 12th May **2016**

A glimpse into catalyst design, Micromeritics Instruments, Norcross GA, US, 18th January **2016**

Are we able to design heterogeneous catalysts?, National Institute of Chemistry, Ljubljana, Slovenia, 21st October **2015**

Are we able to design heterogeneous catalysts?, DSM Nutritional Products, Kaiseraugst, Switzerland, 20th October **2015**

Design of hierarchically organized zeolite catalysts, Instituto de Ciencia de Materiales, Seville, Spain, 11th November **2015**

Design of hierarchically organized zeolite catalysts, Micromeritics Day, CSIC, Madrid, Spain, 25th June **2015**

Catalyst innovation in polyurethane manufacture, Karlsruhe Institute of Technology, Germany, 7th April **2015**

Catalyst innovation in polyurethane manufacture, Beilby Lecture, Society of Chemical Industry, London, UK, 17th March **2015**

New processes for glycerol valorization to commodities, SuBiCat II Symposium, University of St Andrews, UK, 2nd March **2015**

Design of hierarchical zeolite catalysts – Where pore and active site quality meet, University of Bremen, Germany, 5th January **2015**

Design of hierarchical zeolite catalysts – Where pore and active site quality meet, Max Planck Institute of Colloids and Interfaces, Potsdam, Germany, 8th October **2014**

Collaborate with the right partner: my experience with Micromeritics, Micromeritics Instruments, Norcross GA, US, 26th October **2014**

Design of catalytic materials, Albemarle, Amsterdam, the Netherlands, 22nd September **2014**

Bringing catalysts to technical scale – New processes for chlorine production, 10th Anniversary, Institute of Chemical Research of Catalonia, Tarragona, Spain, 18th July **2014**

Design of hierarchical zeolite catalysts – Where pore and active site quality meet, Synfuels, Beijing, China, 4th July **2014**

Design of hierarchical zeolite catalysts – Where pore and active site quality meet, National Institute of Clean-and-Low Carbon Energy, Beijing, China, 3rd July **2014**

Revitalizing the chemical industry by catalyst design, PetroChina Research Institute, Beijing, 2nd July **2014**

Catalytic processes for halogen recycling, PetroChina Research Institute, Beijing, 2nd July **2014**

Design of hierarchical zeolite catalysts – Where pore and active site quality meet, IFP Energies nouvelles, Solaize, France, 17th April **2014**

Design of hierarchical zeolites: opportunities in base catalysis, thyssenkrupp Industrial Solutions, Dortmund, Germany, 7th February **2014**

New catalytic processes for halogen recycling, Clariant Produkte, Bruckmühl, Germany, 29th January **2014**

Catalytic processes for halogen recycling, General meeting COST Action CM1104, Uppsala, Sweden, 6th November **2013**

Deacon chemistry revisited – New catalytic processes for chlorine recycling, Solvay, Brussels, Belgium, 8th July **2013**

Treasure hunting in catalysis by hierarchical zeolite design, Micromeritics workshop on materials characterization, Frickenhausen, Germany, 17th April **2013**

Treasure hunting in catalysis by hierarchical zeolite design, 16th RTIG Diffusion of porous materials, Delft University of Technology, the Netherlands, 4th April **2013**

Treasure hunting in catalysis by hierarchical zeolite design, Andrew Main lecture, University of Alberta, Canada, 14th February **2013**

Scale up of hierarchical zeolites: science fiction or science reality?, TOTAL Catalysis Club Meeting, La Hulpe, Belgium, 24th January **2013**

New catalytic processes for chlorine production, Delft University of Technology, the Netherlands, 13th November **2012**

Engineering of hierarchical zeolite catalysts, UOP-Honeywell Invitational Lecture Series, Des Plaines IL, US, 10th September **2012**

Design of hierarchical zeolites from lab to plant scale, Advanced Porous Materials workshop, ETH Zurich, Switzerland, 22nd August **2012**

Catalysis engineering: from molecules to products, Zeochem, Uetikon am See, Switzerland, 22nd May **2012**

Design of hierarchical zeolite catalysts – Beyond laboratory potential towards implementation, Bayer MaterialScience, Dormagen, Germany, 26th April **2012**

Design of hierarchical zeolite catalysts – Beyond laboratory potential towards implementation, Karlsruhe Institute of Technology, Germany, 25th April **2012**

Design of hierarchical zeolite catalysts – Beyond laboratory potential towards technical realization, Micromeritics Instruments, Norcross GA, US, 15th January **2012**

Design of hierarchical zeolite catalysts – Science fiction or science reality?, University of Alicante, Spain, 10th October **2011**

Catalysis engineering for sustainable development, Bayer Science and Innovation Dialogue, Leverkusen, Germany, 19th October **2011**

Scale up of hierarchical zeolite catalysts – Science fiction or science reality?, John van Geuns lecture, Amsterdam University, the Netherlands, 13th September **2011**

Design of hierarchical zeolite catalysts, Leipzig University, Germany, 19th May **2011**

Hierarchical zeolites – From lab curiosity to industrial use, RWTH Aachen, Germany, 10th May **2011**

Scale up of hierarchical porous zeolites: science fiction or science reality?, Utrecht University, the Netherlands, 19th April **2011**

Scale up of hierarchical porous zeolites: science fiction or science reality?, J. Heyrovsky Institute of Physical Chemistry, Prague, Czech Republic, 7th April **2011**

Hierarchically structured zeolite catalysts: from lab curiosity to industrial practice, Paul Scherrer Institute, Villingen, Switzerland, 28th January **2011**

The post-synthesis toolbox to design hierarchical zeolite catalysts, NANO-HOST workshop, Montpellier, 5th October **2010**

Demand more on your catalyst – Engineering hierarchical zeolites, BASF, Ludwigshafen, Germany, 19th May **2010**

Demand more on your catalyst – Engineering hierarchical zeolites, École Polytechnique Fédérale de Lausanne, Switzerland, 5th May **2010**

Demand more on your catalyst – Design hierarchical zeolites, Zeochem, Uetikon am See, Switzerland, 25th March **2010**

Demand more on your catalyst – Engineering hierarchical zeolites, Institute of Chemical Research of Catalonia, Tarragona, Spain, 25th September **2009**

Control of N_2O emissions in industry – Catalysts and processes, 6th Tøpsoe Catalysis Forum, Munkerupgaard, Denmark, 28th August **2009**

Demand more on your catalyst – Engineering hierarchical zeolites, ENSICAEN, Caen, France, 3rd May **2009**

Control of N_2O in the chemical industry – From waste to product, ENSICAEN, Caen, France, 12th May **2009**

Enhanced catalyst effectiveness – Design of hierarchical zeolites, CAT Catalytic Center, Bayer Materials Science, Aachen, 29th January **2009**

Catalyst effectiveness – The case of (hierarchical) zeolites, Denmark Technical University, Lyngby, Denmark, 21st January **2009**

Hierarchical zeolites: the engineering starts in the pore, University of Valladolid, Spain, 26th November **2008**

Mesoporous zeolites by desilication – Enhanced utilization of microporous crystals, Denmark Technical University, Lyngby, Denmark, 29th April **2008**

Mesoporous zeolites by desilication, Utrecht University, the Netherlands, 2nd June **2008**

Hierarchical zeolites – Enhanced utilization of microporous crystals, Ruhr University Bochum, Germany, 15th April **2008**

Laughing gas in nitric acid production: not a laughing matter, Ercros, Tarragona, Spain, 17th January **2008**

Summary of options for N_2O mitigation in the chemical industry, DSM, Geleen, the Netherlands, 10th January **2008**

Mesoporous zeolite crystals obtained by desilication, ENSICAEN, Caen, France, 21st November **2007**

Mesoporous zeolites obtained by desilication, UC Berkeley, US, 15th June **2007**

The TAP reactor in catalyst development programs, Engelhard, Iselin NJ, US, 9th February **2006**

Greening up catalytic processes in nitric acid production, Universitat Rovira i Virgili, Tarragona, Spain, 21st January **2005**

Catalysis engineering on three levels, Institute of Chemical Research of Catalonia, Tarragona, Spain, 14th April **2004**

Elucidation of the surprising role of NO on the N_2O conversion over Fe-catalysts, Institute of Applied Chemistry Adlershof, Berlin, Germany, 30th April **2002**

N_2O activation – new catalysts and processes for abatement and utilization, University of Alicante, Spain, 19th December **2002**