

**Curriculum Vitae – Prof. Dr. Javier Pérez-Ramírez**

**Date of birth** 28 October 1974 (49 y/o)  
**Place of birth** Benidorm, Spain  
**Citizenship** Spanish  
**Civil status** Married to Amalia, son Erik (20 y/o), daughter Marlies (14 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](mailto:jpr@chem.ethz.ch)

**Website** <http://www.ace.ethz.ch>

**Google Scholar** [Javier Perez-Ramirez](https://scholar.google.com/citations?user=Jpr-Ramirez)

**Twitter** [catalysis\\_ethz](https://twitter.com/catalysis_ethz)

**ORCID** [0000-0002-5805-7355](https://orcid.org/0000-0002-5805-7355)

**Scopus ID** [57203069301](https://scopusid.org/57203069301)

**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<sub>2</sub>O 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**

2019 – 2023 Isaac Manasseh Meyer Chair Visiting Professor, National University of Singapore (NUS)  
 2010 – to date Full Professor of Catalysis Engineering, ETH Zurich  
 2005 – 2009 ICREA Professor and Group Leader, Institute of Chemical Research of Catalonia, Tarragona, Spain  
 2005 – 2008 Associate Professor, Department of 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 – 2028 Member of the Research Commission, ETH Zurich  
 2020 – to date Founder and Director of the NCCR Catalysis, [www.nccr-catalysis.ch](http://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: 120 (Google Scholar) | Authored more than 500+ publications in peer-reviewed scientific journals | >53000 citations, with an average of 55 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 (#11), Nature Nanotechnology (#4), Nature Catalysis (#7), Chemical Reviews (#2), Chemical Society Reviews (#10), Angewandte Chemie International Edition (#28), Journal of the American Chemical Society (#6) | Inventor of 24 patents/patent applications, 4 of which are exploited industrially | Authored of 15 articles in proceedings and 5 book chapters | Guest-edited 6 themed issues | Above data gathered on December 3, 2023.

**Research Mission**

jpr pursues the discovery and understanding of catalytic materials and process concepts, leading to technologies for the carbon-neutral manufacture of chemicals and energy carriers. His efforts to develop ground-breaking closed-loop manufacturing routes for strategic platform chemicals from abundant, preferably renewable, feedstocks such as natural gas, carbon dioxide, biomass, and recently plastic waste confront resource, energy, and environmental challenges of society. For this purpose, structure-function relations are established at distinct length and time scales of the catalytic process, combining the precision synthesis of nano- and mesostructured materials with the advanced characterization and catalytic evaluation under relevant process conditions.

## Keywords

Sustainable chemistry | Renewable energy conversion | Catalysis | Nanoscale engineering

## Foundation and Management of Programs at Large

Besides his group's research, jpr has extended his influence on sustainable chemistry in the scientific and broader community. He led the campaign to establish NCCR Catalysis, a National Competence Center of Research in Switzerland, whose ambitious mission is to develop carbon-neutral chemicals across the whole value chain. This effort involved bringing together and coordinating the activities of 50 groups from 13 different institutions across the country, including both Federal Institutes of Technology, five cantonal universities, two universities of applied sciences, and a private research institute. He has also the founding director of the Green Energy Program at NUS.

## Awards and Honors

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, 9<sup>th</sup> 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 DICI 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

## Research Highlights in the Last 5 Years

- Catalyst design for green methanol production  
*Nat. Commun.* **2019**, 10:3377 | *Nat. Commun.* **2021**, 12:1960 | *Nat. Commun.* **2022**, 13, 5610
- Electrocatalyst design for energy applications  
*Nat. Commun.* **2018**, 9:1477 | *Chem* **2020**, 6, 1707 | *Nature* **2020**, 587, 408 | *Nat. Catal.* **2022**, 5, 545
- Catalytic technologies for the valorization of natural gas using halogen chemistry  
*Nat. Catal.* **2018**, 1, 363 | *Angew. Chem. Int. Ed.* **2019**, 58, 5877 | *Angew. Chem. Int. Ed.* **2021**, 133, 24291
- Design of catalysts based on single atoms and low-nuclearity clusters  
*Nat. Nanotechnol.* **2018**, 13, 702 | *Nat. Nanotechnol.* **2022**, 17, 174 | *Nature* **2023**, 622, 754
- Advanced techniques for characterization of reaction mechanisms  
*Nat. Catal.* **2022**, 5, 605 | *J. Am. Chem. Soc.* **2023**, 145, 7910
- Design of nanostructured catalysts for acetylene-based vinyl chloride production  
*Nat. Catal.* **2020**, 3, 376 | *Nat. Nanotechnol.* **2022**, 17, 606 | *Nat. Commun.* **2023**, 14, 5557
- Towards digital catalysis  
*J. Am. Chem. Soc.* **2022**, 144, 8018 | *Adv. Mater.* **2023**, in press | *Nat. Commun.* **2023**, in press
- Ensemble engineering in the design of catalytic materials  
*Nat. Commun.* **2018**, 9:2634 | *Nat. Catal.* **2019**, 2, 971 | *Nat. Nanotechnol.* **2021**, 16, 129
- Catalyst and process design for the renewable manufacture of chemicals and energy carriers

- Energy Environ. Sci.* **2018**, 11, 1012 | *Energy Environ. Sci.* **2019**, 12, 3425 | *Energy Environ. Sci.* **2023**, 16, 3314
- Sustainable metrics for catalytic processes and chemicals production  
*One Earth* **2021**, 4, 565 | *Green Chem.* **2021**, 23, 9881 | *Energy Environ. Sci.* **2023**, 16, 113

## Lectures

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

## Selected Visiting Periods

2023 Academic Visitor, Department of Chemical and Biomolecular Engineering, National University of Singapore  
 2009 Visiting Professor, Laboratoire Catalyse et Spectrochimie, ENSICAEN, Caen, France  
 2007 Visiting Professor, Department of Chemical Engineering, UC Berkeley, United States  
 2003 Visiting Scientist, 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 NCCR Catalysis, responsible for a budget of 28 M€ in 2020-2024 | As Director of the Green Energy Program, responsible for a budget of 8 M€ in 2019-2022 | See details in Appendix.

## 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 >40 graduate students, >25 PhD students, and >30 postdocs | Current advisor of 9 PhD students, 5 postdoctoral researchers, and 2 lecturers | 24 doctoral theses finalized under his supervision.

## Teaching Duties

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  
 2023 – to date Board member of Catalysis Science & Technology, RSC Publishing  
 2020 – to date Board member of Chem Catalysis, Cell Press  
 2019 – 2022 Editor in Chief of Catalysis Science & Technology, RSC Publishing  
 2018 – to date Board member of Energy Technology, Wiley  
 2017 – to date Board member of ChemCatChem, Wiley  
 2012 – 2018 Board member of Advanced Functional Materials, Wiley  
 2012 – 2018 Board member of Applied Catalysis B Environmental, Elsevier  
 2011 – 2018 Associate Editor of Catalysis Science & Technology, RSC Publishing  
 2010 – 2012 Board member of ACS Catalysis, American Chemical Society  
 2008 – 2021 Board member 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**

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 1<sup>st</sup> 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 | Running | Motorbikes | Anthropology | Art

## List of Publications and Patents

### Peer-Reviewed Publications in Scientific Journals

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**, in press (doi:10.1038/s41467-023-43836-5)

CO<sub>2</sub> 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* **2023**, in press (doi:10.1002/cssc.202301398)

Lattice-stabilized chromium atoms on ceria for N<sub>2</sub>O 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. Martí, J. Pérez-Ramírez, *ACS Sustain. Chem. Eng.* **2023**, 11, 16935 (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**, 24707 (doi:10.1021/jacs.3c08079)

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.* **2023**, in press (doi:10.1002/adma.202307991)

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)

Transcending scales in catalysis for sustainable development, S. Mitchell, A.J. Martín, J. Pérez-Ramírez, *Nat. Chem. Eng.* **2023**, in press (doi not yet available)

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, Going beyond cross-coupling protocols through heterogeneous geminal-atom catalysis, *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)

Recent advances in heterogeneous single-cluster catalysis, X. Li, S. Mitchell, Y. Fang, J. Li, J. Pérez-Ramírez, J. Lu, *Nat. Rev. Chem.* **2023**, 7, 754 (10.1038/s41570-023-00540-8, front cover)

ZrO<sub>2</sub>-promoted Cu-Co, Cu-Fe and Co-Fe catalysts for higher alcohol synthesis, Y. Ge, T. Zou, A.J. Martín, J. Pérez-Ramírez, *ACS Catal.* **2023**, 13, 9946 (doi:10.1021/acscatal.3c02534)

Reaction-induced metal-metal oxide interactions in Pd-In<sub>2</sub>O<sub>3</sub>/ZrO<sub>2</sub> catalysts drive selective and stable CO<sub>2</sub> hydrogenation to methanol, T. Pinheiro Araújo, J. Morales-Vidal, G. Giannakakis, C. Mondelli, H. Eliasson, R. Erni, J.A. Stewart, S. Mitchell, N. López, J. Pérez-Ramírez, *Angew. Chem. Int. Ed.* **2023**, 62, e202306563 (doi:10.1002/anie.202306563, inside cover); *Angew. Chem.* **2023**, 42, e202310340 (doi:10.1002/ange.202306563, inside cover)

NMR-based quantification of liquid products in CO<sub>2</sub> electroreduction on phosphate-derived nickel catalysts, P. Preiksas, A.J. Martín, B.S. Yeo, and J. Pérez-Ramírez, *Commun. Chem.* **2023**, 6, 147 (doi:10.1038/s42004-023-00948-9)

Energy crisis in Europe enhances the sustainability of green chemicals, A. Nabera, I.R. Istrate, A.J. Martín, J. Pérez-Ramírez, G. Guillén-Gosálbez, *Green Chem.* **2023**, 2023, 25, 6603 (doi:10.1039/D3GC01053H, front cover)

Selective hydrogenolysis of 5-hydroxymethylfurfural to 5-methylfurfural over Au/TiO<sub>2</sub>, L. Dong, J. Morales-Vidal, L. Mu, L. Li, N. López, J. Pérez-Ramírez, Z. Chen, *Appl. Catal. B* **2023**, 335, 122893 (doi:10.1016/j.apcatb.2023.122893)

Selectivity control in palladium-catalyzed  $\text{CH}_2\text{Br}_2$  hydrodebromination on carbon-based materials by nuclearity and support engineering, M. Vanni, V. Giulimondi, A. Ruiz-Ferrando, F. Krumeich, A. Clark, S. Mitchell, N. Lopez, J. Pérez-Ramírez, *ACS Catal.* **2023**, 13, 5828 (doi:10.1021/acscatal.2c06394)

Environmental and economic potential of decentralised electrocatalytic ammonia synthesis powered by solar energy, S.C. D'Angelo, A.J. Martín, S. Cobo, D. Freire Ordóñez, G. Guillén-Gosálbez, J. Pérez-Ramírez, *Energy Environ. Sci.* **2023**, 16, 3314 (doi:10.1039/D2EE02683J, inside front cover)

Reaction-induced formation of stable mononuclear Cu(I)Cl species on carbon for low-footprint vinyl chloride production, D. Faust Akl, G. Giannakakis, A. Ruiz-Ferrando, M. Agrachev, J.D. Medrano-García, G. Guillén-Gosálbez, G. Jeschke, A.H. Clark, O.V. Safonova, S. Mitchell, N. López, J. Pérez-Ramírez, *Adv. Mater.* **2023**, 35, 2211464 (doi:10.1002/adma.202211464)

Absolute environmental sustainability assessment of renewable dimethyl ether fuelled heavy-duty trucks, M.A. Charalambous, V. Tulus, M.W. Ryberg, J. Pérez-Ramírez, G. Guillén-Gosálbez, *Sustain. Energy Fuels* **2023**, 7, 1930 (doi:10.1039/D2SE01409B)

Low-valent manganese atoms stabilized on ceria for nitrous oxide synthesis, I. Surin, Z. Tang, J. Geiger, S. Damir, H. Eliasson, M. Agrachev, F. Krumeich, S. Mitchell, V.A. Kondratenko, E.V. Kondratenko, G. Jeschke, R. Erni, N. López, J. Pérez-Ramírez, *Adv. Mater.* **2023**, 35, 2211260 (doi:10.1002/adma.202211260, back cover)

Identifying selective catalysts in polypropylene hydrogenolysis by decoupling scission pathways, S.D. Jaydev, M.E. Usteri, A.J. Martín, J. Pérez-Ramírez, *Chem Catal.* **2023**, 3, 100564 (doi:10.1016/j.checat.2023.100564, front cover)

An artificial leaf device built with earth-abundant materials for combined  $\text{H}_2$  production and storage as formate with efficiency > 10%, C. Ampelli, D. Giusi, M. Miceli, T. Merdzhanov, V. Smirnov, U. Chime, O. Astakhov, A.J. Martín, F.L.P. Veenstra, F.A. Garcés Pineda, J. González-Cobos, M. García-Tecedor, S. Giménez, W. Jaegermann, G. Centi, J. Pérez-Ramírez, J.R. Galán-Mascarós, S. Perathoner, *Energy Environ. Sci.* **2023**, 16, 1644 (doi:10.1039/D2EE03215E)

Unraveling radical and oxygenate routes in the oxidative dehydrogenation of propane over boron nitride, Z. Zhang, J. Tian, X. Wu, I. Surin, J. Pérez-Ramírez, P. Hemberger, A. Bodi, *J. Am. Chem. Soc.* **2023**, 145, 7910 (doi:10.1021/jacs.2c12970, supplementary cover)

Challenges and opportunities in engineering the electronic structure of single-atom catalysts, V. Giulimondi, S. Mitchell, J. Pérez-Ramírez, *ACS Catal.* **2023**, 13, 2981 (doi:10.1021/acscatal.2c05992, supplementary cover)

Design of flame-made  $\text{ZnZrO}_x$  catalysts for sustainable methanol synthesis from  $\text{CO}_2$ , T. Pinheiro Araújo, J. Morales-Vidal, T. Zou, M. Agrachev, S. Verstraeten, P. O. Willi, R. N. Grass, G. Jeschke, S. Mitchell, N. López, J. Pérez-Ramírez, *Adv. Energy Mater.* **2023**, 13, 2204122 (doi:10.1002/aenm.202204122, front cover)

Environmental sustainability assessment of hydrogen from waste polymers, C. Salah, S. Cobo, J. Pérez-Ramírez, G. Guillén-Gosálbez, *ACS Sustain. Chem. Eng.* **2023**, 11, 3238 (doi:10.1021/acssuschemeng.2c05729)

Chlorine-promoted copper catalysts for  $\text{CO}_2$  electroreduction into highly reduced products, T. Zou, F.L.P. Veenstra, E. Ibáñez-Alé, R. García-Muelas, G. Zichittella, A.J. Martín, N. López, J. Pérez-Ramírez, *Cell Rep. Phys. Sci.* **2023**, 4, 101294 (doi:10.1016/j.xcrp.2023.101294, front cover)

Tuning oxygen vacancies in  $\text{Bi}_4\text{Ti}_3\text{O}_{12}$  nanosheets to boost piezo-photocatalytic activity, Q. Tanga, J. Wu, X.-Z. Chen, R. Sanchis-Gual, A. Veciana, C. Franco, D. Kim, I. Surin, J. Pérez-Ramírez, A. Terzopoulou, N. Qin, M. Vukomanovic, B.J. Nelson, J. Puigmartí-Luis, S. Pané, *Nano Energy* **2023**, 108, 108202 (doi:10.1016/j.nanoen.2023.108202)

Droplet-based microfluidics platform for the synthesis of single-atom heterogeneous catalysts, T. Moragues, S. Mitchell, D. Faust Akl, J. Pérez-Ramírez, A. DeMello, *Small Structures* **2023**, 4, 2200284 (doi:10.1002/sstr.202200284, front cover)

Trade-offs between Sustainable Development Goals in carbon capture and utilization, I. Ioannou, Á. Galán-Martín, J. Pérez-Ramírez, G. Guillén-Gosálbez, *Energy Environ. Sci.* **2023**, 16, 113 (doi:10.1039/D2EE01153K, inside front cover)

Identifying descriptors for promoted rhodium-based catalysts for higher alcohol synthesis via machine learning, M. Suvarna, P. Preikschat, J. Pérez-Ramírez, *ACS Catal.* **2022**, 12, 15373-15385 (doi:10.1021/acscatal.2c04349)

Flame-made ternary  $\text{Pd-In}_2\text{O}_3\text{-ZrO}_2$  catalyst with enhanced oxygen vacancy generation for  $\text{CO}_2$  hydrogenation to methanol, T.P. Araújo, C. Mondelli, M. Agrachev, T. Zou, P.O. Willi, K.M. Engel, R.N. Grass, W.J. Stark, O.V.

Safonova, G. Jeschke, S. Mitchell, J. Pérez-Ramírez, *Nat. Commun.* **2022**, 13, 5610 (doi:10.1038/s41467-022-33391-w)

Photoionization reveals catalytic mechanisms, A. Bodi, P. Hemberger, J. Pérez-Ramírez, *Nat. Catal.* **2022**, 5, 850 (doi:10.1038/s41929-022-00847-7)

Catalytic synergies in bimetallic Ru-Pt single atom catalysts via speciation control, V. Giulimondi, A. Ruiz Ferrando, A.H. Clark, S.K. Kaiser, F. Krumeich, A.J. Martín, N. López, J. Pérez-Ramírez, *Adv. Funct. Mater.* **2022**, 32, 2206513 (doi:10.1002/adfm.202206513, frontispiece)

Prospects of producing higher alcohols from carbon dioxide: a process system engineering perspective, C.H. Vo, J. Pérez-Ramírez, S. Farooq, I.A. Karimi, *ACS Sustainable Chem. Eng.* **2022**, 10, 11875 (doi:10.1021/acssuschemeng.2c02810)

Transfer hydrogenation with a carbon-nitride-supported palladium single-atom photocatalyst and water as a proton source, E. Zhao, M. Li, B. Xu, X. Wang, Y. Jing, D. Ma, S. Mitchell, J. Pérez-Ramírez, Z. Chen, *Angew. Chem. Int. Ed.* **2022**, 61, e202207410 (doi:10.1002/anie.202207410); *Angew. Chem.* **2022**, 61, e202207410 (doi:10.1002/ange.202207410)

Unifying views on catalyst deactivation, A.J. Martín, S. Mitchell, C. Mondelli, S. Jaydev, J. Pérez-Ramírez, *Nat. Catal.* **2022**, 5, 854 (doi:10.1038/s41929-022-00842-y)

A review of computational modeling techniques for wet waste valorization: research trends and future perspectives, J. Li, M. Suvana, L. Li, L. Pan, J. Pérez-Ramírez, Y.S. Ok, X. Wang, *J. Clean. Prod.* **2022**, 367, 133025 (doi:10.1016/j.jclepro.2022.133025)

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### Guest Editor of Themed Issues

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J. Pérez-Ramírez, C. Mondelli, H.T. Luk, J.A. Stewart, D. Curulla Ferré, Copper-iron-based catalytic composition comprising zeolites, method for producing such catalytic composition and process using such catalytic composition for the conversion of syngas to higher alcohols, **2020**, WO2020157057

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J. Pérez-Ramírez, C. Mondelli, M. Frei, J.A. Stewart, D. Curulla Ferré, Noble metal promoted supported indium oxide catalyst for the hydrogenation of CO<sub>2</sub> to methanol and process using said catalyst, **2020**, WO2020049071

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J. Pérez-Ramírez, Method for preparation and activation of multimetallic zeolite catalysts, a catalyst composition and application for  $\text{N}_2\text{O}$  abatement, **2004**, WO2004047960

## **Supervision of Research Work**

### **Doctoral Theses**

Dario Faust Akl, Novel tools for the design of single-atom catalysts, 11<sup>th</sup> October **2023**

Thaylan Pinheiro Araújo, Design of promoted reducible oxides for green methanol synthesis, 4<sup>th</sup> October **2023**

Florentine L.P. Veenstra, Chemical and compositional effects in electroreduction of CO<sub>2</sub> over Cu-based catalysis, 21<sup>st</sup> September **2022**

Simon Büchele, Effects of size, modifiers, and carrier engineering in the design of nanostructured catalysts, 24<sup>th</sup> November **2021**

Ali J. Saadun, Catalyst design for the hydrodehalogenation of halomethanes in natural gas upgrading, 3<sup>rd</sup> November **2021**

Selina K. Kaiser, Nanostructured catalysts for sustainable acetylene-based vinyl chloride production, 24<sup>th</sup> March **2021**

Matthias S. Frei, Design of indium oxide-based catalysts for sustainable methanol production, 13<sup>th</sup> January **2021**

Guido Zichittella, Alkane activation by catalytic oxyhalogenation, ETH Zurich, 11<sup>th</sup> December **2019**

Ho Ting Luk, Multicomponent catalytic systems for syngas conversion into higher alcohols, ETH Zurich, 4<sup>th</sup> December **2019**

Evgeniya Vorobyeva, Carbon nitride as a platform for metal atoms and low-nuclearity clusters, ETH Zurich, 20<sup>th</sup> November **2019**

Matthias Scharfe, Catalytic processes for intensified vinyl chloride production, ETH Zurich, 30<sup>th</sup> October **2019**

Davide Albani, Ensemble design in heterogeneous catalysts for selective hydrogenation, ETH Zurich, 21<sup>st</sup> November **2018**

Vladimir Paunović, Catalytic processes for natural gas valorization via bromine chemistry, ETH Zurich, 4<sup>th</sup> April **2018**

Gastón Larrazábal, Transition metal-based catalysts modified with p-block elements for the electrochemical reduction of CO<sub>2</sub>, ETH Zurich, 6<sup>th</sup> December **2017**

Giacomo Lari, Chemocatalytic technologies towards the glycerol biorefinery, ETH Zurich, 18<sup>th</sup> October **2017**

Tobias C. Keller, Tailored aluminosilicate catalysts for sustainable polymer and fuel production, ETH Zurich, 26<sup>th</sup> October **2016**

Oliver Martin, Novel materials for CO<sub>2</sub> capture and conversion to methanol, ETH Zurich, 4<sup>th</sup> May **2016**

Maximilian Moser, Bridging HCl and HBr oxidation over heterogeneous catalysts for halogen production, ETH Zurich, 9<sup>th</sup> December **2015**

Gianvito Vilé, Design of new nanostructured catalysts for selective hydrogenations in flow, ETH Zurich, 4<sup>th</sup> November **2015**

Pierre-Yves Dapsens d'Yvoir, Tailored Lewis-acid zeolites for the production of bio-based chemicals, ETH Zurich, 10<sup>th</sup> June **2015**

Nina-Luisa Michels, From powder to technical body: Structured zeolite catalysts with enhanced functionality, ETH Zurich, 17<sup>th</sup> December **2014**

Maria Milina, Property-function interplay in the design of hierarchical zeolite catalysts, ETH Zurich, 1<sup>st</sup> October **2014**

Amol P. Amrute, Deacon chemistry revisited: new catalysts for chlorine recycling, ETH Zurich, 9<sup>th</sup> October **2013**

Danny Verboekend, New hierarchical zeolite catalysts by post-synthetic design, ETH Zurich, 10<sup>th</sup> October **2012**

Blaise Bridier, Selective hydrogenation of alkynes - catalyst design aided by molecular understanding, ETH Zurich, 14<sup>th</sup> March **2012**

Marta Santiago, Hexaaluminate-type catalysts for N<sub>2</sub>O abatement, Universitat Rovira i Virgili, 29<sup>th</sup> September **2010**

Georgiana Stoica, Chemistry of dawsonites and application in catalysis, Universitat Rovira i Virgili, 18<sup>th</sup> February **2010**

Gerard Novell-Leruth, Catalytic ammonia oxidation on noble metal surfaces: A theoretical approach, Universitat Rovira i Virgili, 15<sup>th</sup> November **2008**

Jozef C. Groen, Mesoporous zeolites obtained by desilication, Delft University of Technology, 26<sup>th</sup> June **2007**

Mohammed N. Debbagh, Catalytic conversions of nitrogen oxides over transition metal zeolites, Université Abdelmalek Essaadi, 21<sup>st</sup> April **2007**

### **Master Theses**

Iris Nogueroles Langa, Hydrogenolysis of polyolefins, ETH Zurich, **2024** (ongoing)

Dennis Ciliak, Electrocatalytic CO<sub>2</sub> reduction to long-chain hydrocarbons, ETH Zurich, **2024** (ongoing)

Suyash Damir, Kinetics of acetylene hydrochlorination over platinum single-atom catalysis: from lab-scale to technical systems, ETH Zurich, **2023**

Sok Ho Chong, Data-driven design of superior ZrO<sub>2</sub>-promoted CuCoFe catalytic systems for higher alcohol synthesis, ETH Zurich, **2023**

Katia Chikri, Hydrogenolysis of commercial-grade high-density polyethylene and polypropylene with titania-supported ruthenium catalysts, ETH Zurich, **2023**

Gian Marco Potros Beshara, Novel catalytic materials for stable and selective propylene production via nitrous oxide-mediated propane dehydrogenation, ETH Zurich, **2023**

Gabriela Dutcã, Manganese-ceria catalysts for direct ammonia oxidation to nitrous oxide, ETH Zurich, **2023**

Simon Verstraeten, ZnO-ZrO<sub>2</sub> catalysts prepared by flame spray pyrolysis for CO<sub>2</sub> hydrogenation to methanol, ETH Zurich, **2022**

Marc Eduard Usteri, Design of ruthenium-based catalysts for polypropylene hydrogenolysis to liquid products, ETH Zurich, **2022**

Adrian H. Hergesell, Thermocatalytic CO<sub>2</sub>-based methanol synthesis with hybrid CO<sub>2</sub>-CO feeds and at mild conditions, ETH Zurich, **2021**

Hristo Bonchev, Bimetallic catalysts for the selective hydrodebromination of dibromomethane to methyl bromide, ETH Zurich, **2021**

Ivan Surin, The role of the carbon support in metal-catalyzed acetylene hydrochlorination, ETH Zurich, **2021**

David Capeder, Pioneering the quantification of interface impact through microfabricated catalysts for thermal CO<sub>2</sub> hydrogenation, ETH Zurich, **2020**

James Luethi, Democratization of <sup>1</sup>H-NMR in eN<sub>2</sub>RR: protocol development and critical assessment for ammonia quantification in electrocatalytic nitrogen reduction, ETH Zurich, **2020**

Spyridon Kanatakis, Design of carbon-based catalysts for propane dehydrogenation: metal-free and earth-abundant metal-containing systems, ETH Zurich, **2020**

Arjun Shah, Impact of hybrid CO<sub>2</sub>-CO feeds on methanol synthesis over In<sub>2</sub>O<sub>3</sub>-oxide-based catalysts, ETH Zurich, **2020**

Marion Short, Kinetic fingerprints of CO<sub>2</sub>-based synthesis and steam reforming of methanol over heterogeneous catalysts, ETH Zurich, **2020**

Michelle Philipp, Promoter engineering of In<sub>2</sub>O<sub>3</sub> catalysts for methanol production via CO<sub>2</sub> hydrogenation, ETH Zurich, **2019**

Gabrijel Novak, CO<sub>2</sub> 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<sub>2</sub> hydrogenation, ETH Zurich, **2019**

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

Klara S. Key, Pd promoted In<sub>2</sub>O<sub>3</sub> catalysts for the direct CO<sub>2</sub> 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**

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

Isabella Giovino, 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<sub>2</sub>-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**

### **Bachelor Projects**

Xiaoyu Jin, ZnO/ZrO<sub>2</sub> catalysts prepared by wet impregnation for CO<sub>2</sub> hydrogenation to methanol, ETH Zurich, **2023**

Wiktoria Wnętkowska, Electrochemical CO<sub>2</sub> 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 electrocatalysts in CO<sub>2</sub> 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<sub>2</sub> 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<sub>2</sub> 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**

Dragana 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™ 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<sub>2</sub>-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<sub>2</sub>-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<sub>2</sub> 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<sub>2</sub>-CeO<sub>2</sub> composite for the oxidation of HCl to Cl<sub>2</sub>, 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<sub>2</sub>/ZrO<sub>2</sub> catalysts for sustainable hydrogen chloride oxidation, ETH Zurich, **2011**

Mrugendra Kantikar, 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<sub>2</sub>O-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

- 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<sub>2</sub> 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<sub>2</sub>O<sub>3</sub>-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<sub>2</sub> into valuable chemicals, ETH Zurich
- 2013 – 2017 Cascade deoxygenation process using tailored nanocatalysts for the production of biofuels from lignocellulosic biomass, Seventh Framework Programme, European Union

2012 – 2015	Enabling new sustainable applications of zeolite catalysts through hierarchical structuring, ETH Zurich
2012 – 2014	CO <sub>2</sub> -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**

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

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

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

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

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

Advancing heterogeneous catalysis via nanoscale engineering, 55<sup>th</sup> Bürgenstock Conference, Brunnen, Switzerland, 2<sup>nd</sup> May **2022**

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

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

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

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

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

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

Discovery and design of catalysts for sustainable technologies, 1<sup>st</sup> European Conference on Plasma Catalysis for CO<sub>2</sub> Valorization and Green Chemistry, Paris, France, 6<sup>th</sup> September **2017**

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

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

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

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

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

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

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

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

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

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

Expanding the horizons of ceria in oxidation and hydrogenation catalysis, Workshop of CeO<sub>2</sub>-based Materials in Catalysis and Electrochemistry, Rauischholzhausen, 27<sup>th</sup> July **2015**

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

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

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

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

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

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

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

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

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

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

Catalytic processes for halogen recycling, Slonano, Ljubljana, Slovenia, 23<sup>rd</sup> October **2013**

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

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

Engineering of hierarchical zeolite catalysts, Jahrestreffen Reaktionstechnik, Würzburg, Germany, 16<sup>th</sup> May **2012**

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

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

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

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

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

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

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

### **Keynote Lectures**

Catalysis and sustainability: a journey from atom to planet, Royal Society, Green Carbon for the Chemical Industry of the Future, London, UK, 11<sup>th</sup> December **2023**

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

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

Advanced catalysis via nanoscale engineering, TOCAT9, Fukuoka, Japan, 28<sup>th</sup> July **2022**

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

Analysis of pore quality in hierarchical zeolite catalysts, 19<sup>th</sup> International Zeolite Conference, Perth, Australia, 9<sup>th</sup> July **2019**

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

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

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

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

Towards catalyst design for CO<sub>2</sub> valorization, Nature Conference on Materials Electrochemistry: Fundamentals and Applications, Shenzhen, China, 13<sup>th</sup> January **2018**

Catalytic technologies towards the glycerol biorefinery, 46<sup>th</sup> World Chemistry Congress, São Paulo, Brazil, 11<sup>th</sup> July **2017**

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

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

New applications of CeO<sub>2</sub> in oxidation and hydrogenation catalysis, Fundamentals and Applications of Ceria in Catalysis, Udine, Italy, 13<sup>th</sup> July **2014**

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

Catalytic processes for halogen recycling, TOCAT7, Kyoto, Japan, 5<sup>th</sup> June **2014**

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

Control of N<sub>2</sub>O emissions in industry – Catalysts and processes, 2<sup>nd</sup> International Symposium on Air Pollution Abatement Catalysis, Cracow, Poland, 9<sup>th</sup> September **2010**

Control of N<sub>2</sub>O in industry – Overview of present technologies and challenges ahead, Fifth International Symposium on Non-CO<sub>2</sub> Greenhouse Gases, NCGG5, Wageningen, the Netherlands, 30<sup>th</sup> June **2009**

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

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

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

Control of N<sub>2</sub>O emissions in the chemical industry, ourth International Symposium on Non-CO<sub>2</sub> Greenhouse Gases, NCGG4, Utrecht, the Netherlands, 5<sup>th</sup> July **2005**

N<sub>2</sub>O abatement – Low vs high temperature catalysis, 4<sup>th</sup> International Conference on Environmental Catalysis, Heidelberg, Germany, 8<sup>th</sup> June **2005**

### **Invited Lectures**

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

Catalysis and sustainability: a journey from atom to planet, Khalifa University, UAE, 27<sup>th</sup> November **2023**

Catalysis and sustainability: a journey from atom to planet, National University of Singapore, 19<sup>th</sup> October **2023**

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

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

Advanced catalysis via nanoscale engineering, RWTH Aachen, Germany, 22<sup>nd</sup> May **2023**

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

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

Advanced catalysis via nanoscale engineering, Technische Universität Darmstadt, Germany, 26<sup>th</sup> January **2023**

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

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

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

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

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

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

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

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

Enhancing catalysis via nanoscale engineering, Givaudan, Kempthal, Switzerland, 14<sup>th</sup> December **2021**

Catalysis engineering for sustainable technologies, Sulzer, Winterthur, 30<sup>th</sup> November **2021**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Transformative chemistry for the energy grand challenge, Workshop 'Tackling the CO<sub>2</sub> challenge', National University of Singapore, 10<sup>th</sup> 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, 5<sup>th</sup> September, **2018**

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

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

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

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

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

Propelling sustainable chemistry with catalysis, Tsinghua University, China, 6<sup>th</sup> June **2018**

Catalysis engineering for sustainable technologies, University of Fribourg, Switzerland, 11<sup>th</sup> April **2018**

Catalysis engineering for sustainable technologies, University of Oxford, UK, 12<sup>th</sup> March **2018**

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

Propelling sustainable chemistry with catalysis, University of Aberdeen, UK, 7<sup>th</sup> March **2018**

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

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

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

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

Catalysis engineering for sustainable technologies, Firmenich, Geneva, Switzerland, 7<sup>th</sup> April **2017**

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

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

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

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

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

Chemical innovation through catalysis engineering, Industry Day, ETH Zurich, 22<sup>nd</sup> September **2016**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Design of catalytic materials, Albemarle, Amsterdam, the Netherlands, 22<sup>nd</sup> September **2014**

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

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

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

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

Catalytic processes for halogen recycling, PetroChina Research Institute, Beijing, 2<sup>nd</sup> July **2014**

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

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

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

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

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

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

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

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

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

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

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

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

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