

ENERGYPOLIS SEMINAR

12. 5. 2016, 16:00 - 17:00, ENERGYPOLIS Sion, 4th floor, Seminar room

Toward the design of heterogeneous catalysts for sustainable technologies

Javier Pérez-Ramírez

Institute of Chemical and Bioengineering, ETH Zurich, Switzerland

<https://www.ace.ethz.ch>

Heterogeneous catalysis is quite possibly the most relevant discipline in the chemical industry, spearheading improvements in process sustainability by improving the exploitation of raw materials, enabling the transition from fossil to renewable feedstocks, reducing energy consumption, and minimizing the environmental footprint. To confront these challenges head on, this vibrant discipline is becoming increasingly design-driven, a shift which is facilitated by the availability of increasingly powerful tools that enable the continued development of fundamental knowledge over different time and length scales. The design of a heterogeneous catalyst, a dream not long ago, is becoming a reality. In this talk, I will discuss recent examples from my laboratory to illustrate how this intellectual growth in the understanding of catalyzed processes can kindle revolutionary technological advancements.

References:

- [1] B. Puértolas, T. Keller, S. Mitchell, J. Pérez-Ramírez, "Deoxygenation of bio-oil over solid base catalysts: From model to realistic feeds", *Appl. Catal., B* **2016**, 184, 77-86 ([doi:10.1016/j.apcatb.2015.11.017](https://doi.org/10.1016/j.apcatb.2015.11.017))
- [2] G.M. Lari, P.Y. Dapsens, D. Scholz, S. Mitchell, C. Mondelli, J. Pérez-Ramírez, "Deactivation mechanisms of tin-zeolites in biomass conversions", *Green Chem.* **2016**, 18, 1249-1260 ([doi:10.1039/C5GC02147B](https://doi.org/10.1039/C5GC02147B)), inside front cover, highlighted in Chemistry World)

CV: Prof. Javier Pérez-Ramírez



Javier Pérez-Ramírez studied Chemical Engineering at the University of Alicante, Spain and earned his PhD degree at TUDelft, Netherlands in 2002. Since 2010, he is full professor of Catalysis Engineering at the Institute for Chemical and Bioengineering of the ETH Zurich. His team pursues the design of heterogeneous catalysts and reactor concepts devoted to sustainable technologies. Topics of current interest include natural gas functionalization, carbon dioxide valorization, biomass to chemicals and fuels, the manufacture of specialty chemicals, and the rational understanding of catalyst scale up. He is responsible for educating undergraduate students at ETH Zurich in reaction engineering and catalysis, emphasizing the vital importance of these disciplines to tackle the current and future energy and environmental challenges of society. He has published over 375 articles and is co-inventor of 16 patents, several of which are under industrial exploitation. His contributions have been recognized by several awards like the Otto-Roelen-Medal (2012), the EFCATS Young Researcher Award (2013), and the Beilby Medal and Prize (2014). He is Associate Editor of Catalysis Science and Technology, the RSC's flagship catalysis journal.