

UniSysCat - Colloquium

Prof. Javier Pérez-Ramírez

Institute for Chemical and Bioengineering and NCCR Catalysis, ETH Zurich

Start Time: Wednesday, January 31, 2024 04:00 pm

End Time: Wednesday, January 31, 2024 05:30 pm

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or via Zoom

Catalysis and Sustainability: A Journey from Atom to Planet

Javier Pérez-Ramírez

Institute for Chemical and Bioengineering and NCCR Catalysis, ETH Zurich, Switzerland

Ensuring a sustainable future for the chemicals and energy industries is a pressing global concern that has far-reaching impacts on the environment, human health, quality of life, and the economy. Catalysis plays a crucial role in this journey, constantly pushing the boundaries of conventional design to spearhead the transition towards defossilized and circular chemical manufacturing. This talk aims to illustrate the interdisciplinary and cross-scale mindset required to design catalysts that meet the ever-evolving sustainability criteria, bridging the gap between atom and planet. Delving into the latest research from my laboratory, I will showcase how a deeper understanding of catalyzed processes is driving revolutionary technological advancements. Through case studies in key areas such as CO₂ valorization, polymer manufacture, and organic synthesis, I will exemplify how nanoscale engineering and the availability of increasingly powerful tools to access structural variations and mechanism under relevant conditions aid catalyst discovery. At the forefront of design, I will demonstrate the importance of precisely controlling the architecture, speciation, and dynamics of supported metals in low-nuclearity catalysts, highlighting the impact that even the smallest changes can have on performance. The presentation will touch on current frontiers in catalyst synthesis and characterization, and emphasize the critical role of quantitative metrics in guiding low-carbon strategies.

Prof. Dr. Reinhard Schomäcker

Organizer