

Mechanistic understanding, design, and multicatalysis in the development of catalytic reactions

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Chemical catalysis is key for sustainable development, by enabling cleaner technologies, improving the material- and energy-efficiency of chemical processes, and facilitating the valorization of renewable resources. Here I will discuss our research in the field of chemical catalysis driven by these motivations. Our research is pillared on three distinct but intertwined strategies, including the catalyst development by improving mechanistic understanding of the catalytic reactions, the development of new reactions by mechanistic design, and the development of (complex) transformations by relay multicatalysis. Each strategy will be portrayed with selected recent examples along with our current efforts.

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