

第104回触媒化学融合研究センター講演会

産総研触媒化学融合研究センターでは、様々な分野で活躍している大学、公的研究機関、企業等の方々をお招きして、講演会を開催することで分野の垣根を越えた連携の実現を目指しています。

多くの方々のご参加をお待ちしております。

日時: 2023年12月4日(月) 14:00~15:30

場所: 産総研つくば中央5群 第3会議室(6602室)

講演概要:

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(Head of Laboratory of Inorganic Chemistry ETH Zürich)

UNDERSTANDING CATALYSIS, ONE ATOM AT A TIME



Most efficient chemical processes used in industry rely on heterogeneous catalysis. While the search for more sustainable processes and the changes in environmental policies impose the continuous development of more efficient catalysts, we have currently little understanding of the structure of the actives in these processes. Hence, due to their inherent complexity, heterogeneous catalysts have been mostly developed empirically.

Here, we will show how constructing active sites, one atom at a time on surfaces, enables molecular-level understanding and implementation of rational approaches for the improvement of catalytic processes. We will first illustrate how this approach enables to generate selective single-site catalysts. We will next show how from these isolated (single) sites, one can generate and understand far more complex systems such as supported nanoparticles, where interfaces, alloying... play a critical role. This lecture will be developed around these themes and will show how the development of advanced characterization tools augmented by computational approaches can provide useful information to bridge the gap between fundamental and applied (industrial) catalysis.

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