

Fakultät 1
Institut für Physik

Invitation to the Physics Special Colloquium

Lecturer:

***Prof. Ya-Huei (Cathy) Chin
University of Toronto, Toronto, Canada***

Topic:

"Molecular-Level Foundations of Sustainable Catalytic Transformations: A Tale of Reactive Oxygen versus Reactive Hydrogen in Catalytic Cycles"

Catalytic technology development spans multiple disciplines, from elucidating atomistic and electronic phenomena to reactor engineering and process optimization. In this talk, I will present an overview of current research challenges in uncovering the structure and dynamics of catalytic surfaces and the resulting molecular dance steps of chemical building blocks that govern the sustainable synthesis of value-added chemicals and next-generation fuels. The focus is on engineering reactive surfaces with atomic precision and on reshaping the reaction free-energy landscape, enabling the discovery of new chemistry and catalytic pathways. Illustration includes two contrasting examples—the roles of reactive oxygen in oxidation of alkanes and alkanols and those of reactive hydrogen in hydrogenation and hydrodeoxygenation, both on transition metals and oxides. This molecular level knowledge guides us to discover and design of active sites and reaction environment for effective catalytic transformation.

Date: Monday, 23.03.2026

Time: 03:30 p.m.

Location: ZHG, Lecture Hall C

Im Auftrag von Prof. Flege - Stefanie Jannasch

FG Angewandte Physik und Halbleiterspektroskopie

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