chemisch
physikalische
gesellschaft

Gegründet im Jahre 1869 von H. Hlasiwetz, J. Loschmidt, J. Petzval und J. Stefan

EINLADUNG

zum Vortrag von

Dr. Noelia Barrabés Rabanal

Technische Universität Wien, Institut für Materialchemie

Atomically Precise Nanocatalysts by Metal Clusters

am Dienstag, 23. April 2024, um 17:30 Uhr

Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmanngasse 5, 1. Stock

Barrierefreier Zugang: Boltzmanngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals

Abstract:
Catalysis is a key technology on the way to a sustainable society. However, to exploit the full potential of nanoparticles in catalytic processes, a deep understanding of their behaviour at the molecular level is required - a significant challenge. To overcome this challenge, the development of novel nanostructures with precise control over size, composition and surface properties is essential. Metallic nanoclusters are a promising route to this goal and promise significant advances in nanoscience.
In recent years, our efforts have focused on the use of metal nanoclusters to unravel the intricacies of surface science and catalysis. A key goal is to create active catalytic surfaces at the atomic scale, tailored to specific properties that promote sustainable processes. Using a mixture of comprehensive structural characterisation and operando spectroscopy, we seek to unlock reaction mechanisms and establish a link between the structure of metal clusters and catalytic activity.
In addition, our focus on chiral catalysis has led us to investigate and manipulate the chiral properties of gold nanoclusters. Through targeted design, we have conferred different degrees of chirality to these clusters, offering not only fundamental insights but also promising prospects for asymmetric reactions. By merging experimental and theoretical approaches, we aim to deepen our understanding of chirality in metal nanoclusters and advance their utility for catalytic purposes.

Recent publications:
N. Müller, R. Banu, A. Loxha, F. Schrenk, L. Lindenthal, C. Rameshan, E.Pitternauer, J. Llorca, J. Timoshenko, C. Marini, N.Barrabes*; *Dynamic Behaviour of Platinum and Copper Dopants in Gold Nanoclusters Supported on Ceria Catalysts*
Communications Chemistry (Nature group) (2023), 6, Article number: 277 (2023)
https://doi.org/10.1038/s42004-023-01068-0 , Invited paper
V. Truttmann, A. Loxha, R. Banu, E. Pittenauer, S. Malola, M.F. Matus, Y. Wang, E. Ploetz, G. Rupprechter, T. Bürgi, H. Häkkinen, C. Aickens, N.Barrabes*; *Directing intrinsic chirality in gold nanoclusters: preferential formation of stable enantiopure clusters in high yield and experimentally unvelling the "super" chirality of Au144*
ACS Nano (2023) 17, 20, 20376-20386 doi:10.1021/acsnano.3c06568

CHEMISCH-PHYSIKALISCHE GESELLSCHAFT
c/o Universität Wien, Fakultät für Physik, 1090 Wien, Boltzmanngasse 5, Austria
Generalsekretär: Christl Langstadlinger
Tel.: +43-(0)1-4277/51108 - Mobil: 0664-60277 51108
E-Mail: christl.langstadlinger@univie.ac.at - http://www.cpg.univie.ac.at
ZVR-Zahl: 513907440
Konto: Bank Austria - IBAN: AT22 1100 0086 4440 8000 - BIC: BKAUATWW