

EINLADUNG

zum Vortrag
von

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**Gold and Silver in Nanoscale, Dispersed by Ligands to
Molecular Precision**

am

Mittwoch, 16. Dezember 2015 um 16:00 Uhr

Technische Universität Wien
Bauteil BD Hoftrakt, Seminarraum BD 02, 2 OG.
1060 Wien, Getreidemarkt 9

Abstract:

Nanometer-scale, ligand-stabilized noble metal clusters have emerged in recent years as a novel form of nanoscale matter with potential applications in molecular electronics, optics, sensing, drug delivery and biolabeling.¹ Tremendous advances have been achieved in understanding their stability and structure due to contributions from synthetic work, X-ray crystallography and density functional theory computations. The general features of their electronic structure can be understood surprisingly well from the simple concepts that have been used in the related field of bare gas-phase metal clusters since 1980's, particularly from the so-called "superatom model" that accounts for the delocalized sp-electrons in the metal core. Forming in most cases the frontier orbitals of the cluster, these electrons are responsible for low-energy optical transitions and much of the chemistry. The organic ligand layer facilitates chemical functionality and imparts in many cases chirality. Some recent highlights in understanding the structure and properties of these novel nanomaterials composed of gold, silver, or their intermetallics are discussed, and a novel application for site-specific conjugation to enteroviruses for TEM imaging is demonstrated.²

[1] Protected Metal Clusters: From Fundamentals to Applications, ed. by T. Tsukuda and H. Häkkinen (Elsevier, 2015).

[2] V. Marjomäki et al., Proc. Natl. Acad. Sci (USA) **111**, 1277 (2014).

FWF SFB F45 „Functional Oxide Surfaces and Interfaces (FOXSI)“

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