

# Charles T. Campbell

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**Monday, 4<sup>th</sup> September 2017, 16:00 s.t.**

TU Wien, Institut für Angewandte Physik, E134

1040 Wien, Wiedner Hauptstraße 8-10

Green Tower „A“, 5<sup>th</sup> floor, SEM.R. DA grün 05 (room no. DA05E10)



## ***Supported metal nanoparticle catalysts: predicting how size and support affect metal atom energetics and thus catalytic performance***

Many important catalysts and electro-catalysts for energy and environmental technologies involve late transition metal nanoparticles dispersed across the surface of some support material. The activity and long-term stability of these materials depend sensitively on particle size below 5 nm, and, in this size range, upon the support material. The relationships between the energetic stability of late transition metal particles on oxide supports and their structural, electronic, chemisorption and catalytic properties have been examined in detail. We will show predictive correlations amongst the energy of the metal atoms in these nanoparticles (i.e., the metal-atom chemical potential) and their particle size as well as the nature of the support surface. The strength with which they bond adsorbates, their catalytic kinetics and their sintering rates also correlate with this metal-atom chemical potential, and thus helps explain particle size and support effects in catalysis.

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**Charles T. Campbell** is the Rabinovitch Endowed Chair in Chemistry at the University of Washington. He is an elected Fellow of the ACS, AVS and AAAS. He received the ACS Adamson and Colloid or Surface Chemistry Awards, the Gerhard Ertl Lecture Award, the NACS Burwell Lectureship, the AVS Welch Award, the Gauss Professorship and a Humboldt Research Award. He received his BS (1975) and PhD (1979) degrees at the University of Texas at Austin, then did postdoctoral research in Germany as a Humboldt Fellow with Gerhard Ertl (who won the 2007 Nobel Prize in Chemistry).

All interested colleagues are welcome to this seminar lecture (45 min. presentation followed by discussion)

Friedrich Aumayr  
(LVA-Leiter)

U. Diebold  
(Seminar Chair)