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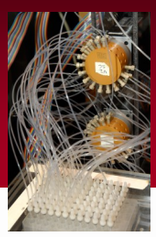
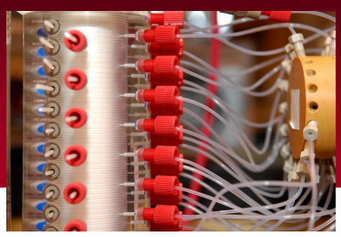


The Gene and Linda Voiland School of

Chemical Engineering and Bioengineering

2015 Seminar Series

Monday, April 20, 2015

12:10 p.m. Wegner G1

Charlie Campbell
Rabinovitch Endowed Chair in Chemistry
University of Washington

Professor Charles T. Campbell is the Rabinovitch Endowed Chair in Chemistry at the University of Washington, where he is also Adjunct Professor of Chemical Engineering and of Physics. He is the author of over 290 publications and two patents on surface chemistry, catalysis, physical chemistry and biosensing, with an h-index of 67 and over 1200 citations in 2013 alone. He is an elected Fellow of both the ACS and the AAAS, and Member of the Washington State Academy of Sciences. He received the Arthur W. Adamson Award of the ACS and the ACS Award for Colloid or Surface Chemistry, the Gerhard Ertl Lecture Award, the Robert Burwell Award/Lectureship of the North American Catalysis Society, the Ipatieff Lectureship at Northwestern University and an Alexander von Humboldt Research Award. He served as Editor-in-Chief of Surface Science for ten years, and now serves as Editor-in-Chief of Surface Science Reports, and on the Boards of the Journal of Physical Chemistry, Catalysis Reviews, Catalysis Letters and Topics in Catalysis. He received his BS (1975) and PhD (1979) degrees at the University of Texas in Chemical Engineering and Chemistry, respectively, then did postdoctoral research in Germany under Gerhard Ertl (who later won the Nobel Prize in Chemistry). He then was a staff scientist for five years at Los Alamos National Lab.

Thermodynamics and kinetics of elementary reaction steps on late transition metal catalysts, and in their sintering

A survey of experimental and theoretical results concerning the thermodynamics and kinetics of surface chemical reactions of importance in late transition metal catalysis will be presented. Topics include: (1) calorimetric measurements of the adsorption energies of small molecules and molecular fragments on single crystal surfaces, and their comparison to different DFT methods; (2) new measurements of the entropies of adsorbates and the trends they follow, (3) using these together with elementary-step rate measurements to build microkinetic models for multi-step catalytic reactions, and a method for analyzing these that quantifies the extent to which each elementary step and intermediate controls the net rate; and, (4) studies of the energetics and kinetics of sintering of oxide-supported late transition metal nanoparticles. (Work supported by NSF and DOE-OBES Chemical Sciences Division.)