



## Scientific Evening Talk

**Tuesday, Nov. 27, 2012, 18.30 h**

Magnus-Haus Berlin, Am Kupfergraben 7, 10117 Berlin

*The 'real' atomic structure of  
nanoparticles for catalysis*

**Prof. Dr. Richard Palmer**

*University of Birmingham, UK*

The discussion will be chaired by

*Prof. Dr. Wolfgang Eberhardt, Scientific Director, Magnus-Haus*

Nachsitzung' with food and drinks in the 'Remise' sponsored by the WE-Heraeus-Foundation  
RSVP:

[http://www.dpg-physik.de/dpg/magnus/formulare/formular\\_2012-11-27/anmeldung-2012-11-27.html](http://www.dpg-physik.de/dpg/magnus/formulare/formular_2012-11-27/anmeldung-2012-11-27.html)

**Richard Palmer** was born in Swansea in 1961. He obtained his first degree (1983) and PhD (1986) at Cambridge University, where he held 1851, Clare College and Royal Society Research Fellowships. In 1994 he was appointed Professor of Experimental Physics at the University of Birmingham where he founded the first centre for Nanoscience in the UK. He has held visiting positions at Cornell, Oxford and Harvard Universities. He was awarded the 1996 CV Boys Medal of the Institute of Physics (IoP) and was Mott Prize Lecturer in 1997 and IoP Ireland Lecturer in 2006. In 2010 he was awarded the degree of Doctor h.c. by Hasselt University. His work (300+ publications and many patent applications) has led to the formation of five small companies and featured in numerous media articles. He was elected Fellow of the Royal Society of Chemistry in 2012.

**Abstract:** Size-selected nanoclusters (nano-particles), assembled from atoms in the gas phase, represent a new class of model catalysts and have already been exploited in protein microarrays. But theoretical treatments of the atomic structure of such nanoparticles far outstrip direct experimental measurements to date. Now aberration-corrected scanning transmission electron microscopy, with a spatial resolution of only 0.1 nm, provides 3D structural images with single atom sensitivity. The new results presented will include atomic imaging of Au atom dynamics on the surface of magic-number nanoclusters, the purposeful transformation of size-selected clusters under the electron beam to obtain their ground state structure and first atomic imaging results for small Au clusters, notably Au<sub>55</sub> and Au<sub>20</sub>. Finally, the prospect of a new generation of cluster beam sources, with the potential to make size-selected nanoclusters on the industrial scale, will be discussed.