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Unifying Concepts in Catalysis

UniCat Colloquium

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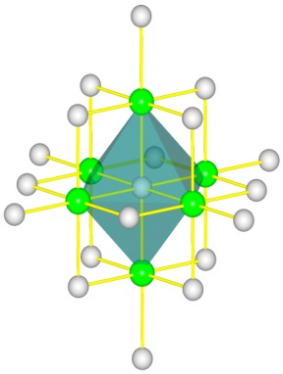
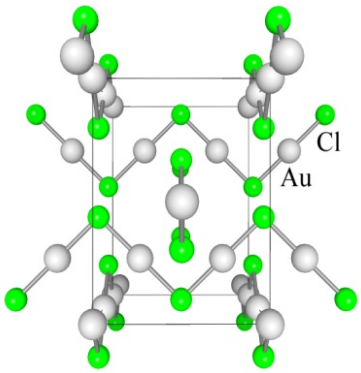
Lecturer: **Prof. Peter Schwerdtfeger**, Centre for Theoretical Chemistry and Physics, The New Zealand Institute for Advanced Study, Massey University Auckland, New Zealand

Title: **Relativistic Effects in the Chemistry and Physics of Gold**

Abstract: Gold is a rather unusual element. In spite of the similarity in the electronic structure between the Group 11 elements ($d^{10}s^1$; they all crystallize within the fcc structure), there are only a few resemblances between these elements. Gold has an unusually large ionization potential and electron affinity, which are reflected in all known gold clusters. Gold-ligand bonds show unusually large force constants and small interatomic bond distances compared to their Group 11 congeners. Some gold compounds show strong dispersive type of interactions (termed aurophilic interactions). Gold halides crystallize in unusual chain structures compared to the cubic structures of AgCl, for example (see pictures below). Gold also shows interesting catalytic activities at the nano-scale. Only in the last two decades has it become clear that relativistic effects are responsible for these anomalies. This talk will show typical anomalies in the chemistry of gold and will discuss relativistic effects in detail with some emphasis on gold clusters. Predictions for physical properties of the next Group 11 element with nuclear charge Z=111 (now named Röntgenium), which has recently been discovered by the GSI group in Darmstadt, are also given.





Date: **Wednesday, 09 November 2011**

Time: **5:15 pm - around 6:45 pm**

Location: **TU Berlin; Institute of Chemistry**
Straße des 17. Juni 115; 10623 Berlin
Building C; Lecture Hall C 243

Organiser: **Prof. Martin Kaupp (TUB)**

Coffee and tea will be served thirty minutes prior to the lecture start.
Guests are cordially invited to attend!

Prof. Dr. Matthias Driess, Chair of the Cluster of Excellence UniCat