

Special UniCat Colloquium

TU Berlin, Division of Organic Chemistry in collaboration with UniCat

(www.unicat.tu-berlin.de)

Lecturer: **Professor Dudley H. Williams**, Churchill
College, University of Cambridge, Department of
Chemistry

Title: **How Enzymes Work their Magic**

Abstract: Without enzymes, organisms could not function. They would be as a freezing Antarctic explorer with fuel but no means of ignition. But, unlike the explorer, they do not have the option to overcome a formidable barrier through thermal excitation, for foods decompose under such circumstances. Instead, evolution provided them with the seemingly only possible solution - to lower the barrier, instead of climbing over it. But how do they work this seeming magic?

They lower the barrier by binding the intermediate state of the enzyme-catalyzed reaction remarkably strongly. So strongly that the binding is not comprehensible on the traditional views that non-covalent interactions are localised and have characteristic strengths. Rather, non-covalent interactions are mutually strengthened when their networks are extended in a strain-free manner. It is for this same reason that the melting points of crystals are increased upon the removal of impurities.

Thus, enzymes are like "impure proteins". The stability of the whole is increased through network completion - effected by addition of the intermediate state of the enzyme-catalyzed reaction. The intermediate state completes the jigsaw puzzle of weak interactions. Evidence will be presented to support this view.

Date: **Monday, 3 May 2010**

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

Location: **TU Berlin, Institute of Chemistry,
Straße des 17. Juni 115, 10623 Berlin
Building C, room C 243**

Organiser: Prof. Dr. H. Schwarz (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