



UNIVERSITÄT
BAYREUTH

Elite Study Programme in Macromolecular Science

Module

Light Harvesting Processes

September 18-19, 2006
University of Bayreuth, Germany
March 21-24, 2007
Banz Monastery, Germany

Prof. Richard Cogdell (Glasgow)
Prof. Hugo Scheer (München)
Dr. Leszek Fiedor (Krakau)
Prof. Jürgen Köhler (UBT)
Prof. Frank Würthner (Würzburg)
Prof. Mukundan Thelakkat (UBT)

Winter term 2006/2007

The teaching module in the winter term 2006/2007 within the Elite Study Programme "Macromolecular Science" is on "**Light Harvesting Processes**". The courses cover aspects in biology, chemistry and physics of photosynthesis, natural and synthetic light harvesting materials, and solar cells. The module consists of three parts.

1) Series of lectures on basic principles of photosynthesis, light harvesting and their application in solar energy conversion and water splitting reaction

Prof. Richard Cogdell (Glasgow)

An introduction in bacterial photosynthesis will be given by Prof. Richard Cogdell (Glasgow), who since the early 1970's has been involved on Protein crystallography and bacterial photosynthesis. In 1995 he was the leading scientist to determine the three dimensional structure of a light-harvesting complex from the purple bacterium, *Rhodospseudomonas acidophila*.

Prof. Hugo Scheer (München) will talk about investigations of biological chromoproteins. His research focuses on the biochemical and biophysical manipulation of light harvesting complexes and reaction centers and also on the photoinduced dynamics of photochromic proteins.

Dr. Leszek Fiedor (Cracow) will contribute a lecture on techniques of reconstitution and pigment exchange in photosynthetic antenna complexes. His recent research is focused on energy transfer in bacterial photosynthetic unit via modelling and reconstitution of bacterial light harvesting complexes. His scientific activity centers on chlorophyll chemistry and biosynthesis in relation to primary photosynthetic processes in bacteria and plants.

Prof. Jürgen Köhler (Bayreuth) investigates the optical spectroscopy of single light harvesting complexes and of single synthetic organic molecules. He will give an introduction to single molecule spectroscopy and time resolved emission studies of these systems.

Prof. Frank Würthner (Würzburg) will introduce the field of synthetic organic light harvesting molecules and dyes. His group is actively involved in the fields of Biomolecular Recognition, Liquid Crystals, Supramolecular Dye Chemistry, and Functional Dyes. His talk will be focused on bio-inspired light harvesting antennae based on self-assembled artificial zinc chlorines.

Prof. Mukundan Thelakkat (Bayreuth) will give an overview about the principles of light harvesting, charge generation and separation in organic and hybrid solar cells.

2) Participation of the conference on „Light Harvesting Processes

March 21- 24, 2007, Banz Monastery

The students will attend the **conference „Light Harvesting Processes.**

This conference gives insight into the complex processes in the photochemical and dark reactions involved in photosynthesis. Additionally this meeting will give ideas and inspirations to understand and mimic synthetically some of the steps involved in the above process. Closely related technological phenomena are synthetic light harvesting and photovoltaics.

Aim of the conference is to bring together scientists from different areas such as biology, chemistry, physics and technology, working in the field of light-harvesting processes and related subjects. The meeting will provide a platform for interdisciplinary communication and the exchange of concepts.

The confirmed invited speakers include Thomas Basché (Mainz, Germany), Richard Cogdell (Glasgow, U.K.), Frans de Schryver (Leuven, Belgium), Jochen Feldmann (Munich, Germany), Jasper Knoester (Groningen, Netherlands), Yoshiaki Kobuke (Ikoma, Japan), Serdar Sariciftci (Linz, Austria), Klaus Schulten (Urbana, USA), Frank Würthner (Würzburg, Germany), James Barber (Imperial College London).

The homepage of the conference is:

<http://www.LHP-bayreuth.de>

3) Seminar on the scientific topics covered in the conference

The participating students will be divided into interdisciplinary groups consisting of 2-3 students per group. Each group will select one main topic of the conference and will prepare a presentation including the basics, different stages of the scientific development as well as highlights. A seminar with a duration of 30 – 45 minutes will be given by each group.