

Invited External Seminar, Monday December 19, 13:00 -14:00 (in person)

Department of Physics, Seminar room ($\Phi 2$ - 3rd fl.)

Rectangular ladder-type pentaphenyl helices: Synthesis and chiroptical properties

Prof. Dr. Ulli Scherf

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Ladder-type pentaphenyl chromophores contain a rigid, planar π -electron system and show bright fluorescence. Such moieties are ideal for studying interchromophoric interactions and delocalization of electronic excitations. We report on the synthesis of helical polymers with a rigid square structure, based on ladder-type pentaphenyls that are connected via chiral spirobifluorene linkers. Variation of the circular dichroism of the polymers with increasing chain length provides direct evidence for delocalization of electronic excitations over at least 10 monomeric units. The observed interplay between localized and delocalized excited states provides a new paradigm for interpreting the circular dichroism spectra also of other helical polymers, such as proteins or polynucleic acids.

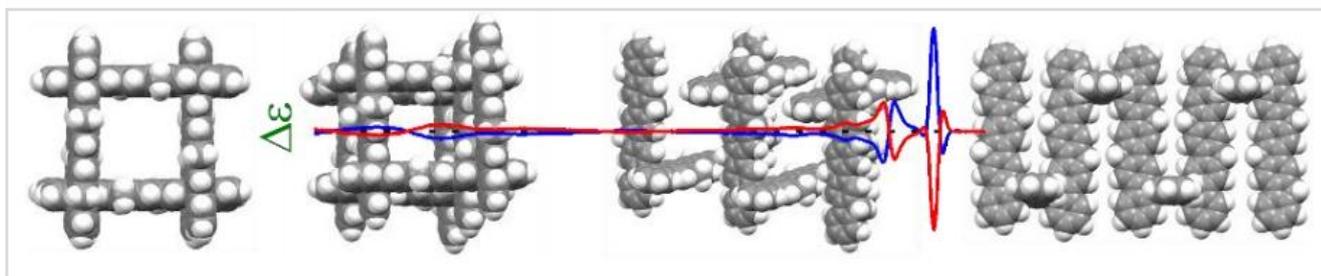


Figure 1: Rectangular, π -conjugated ladder polymers of one particular handedness provide an answer on the question of delocalization of their lowest energy photoexcitation

Short CV

Education

Habilitation, Organic Chemistry, 1996, Johannes-Gutenberg Universität, Mainz

PhD, Polymer Chemistry, 1988, Friedrich-Schiller-Universität, Jena.

Diploma in Chemistry, 1983, Friedrich-Schiller-Universität, Jena.

Professional Experience

1992 - 2000 Senior Researcher, Max-Planck-Institute for Polymer Research, Mainz

*1990 - 1992 Research Associate (VCI fellow), Max-Planck-Institute for Polymer Research, Mainz
Research Adviser: Prof. Dr. Klaus Müllen*

*1988 - 1989 Research Associate,, Institut für Tierphysiologie, Sächsische Akademie der Wissenschaften zu Leipzig, DDR
Research Adviser: Prof. Dr. Heinz Penzlin*

*1984 - 1988 Graduate Studies, Friedrich-Schiller-Universität, Jena, DDR
Thesis Adviser: Prof. Dr. Hans-Heinrich Hörhold*

Positions

08/2010 acting director of the interdisciplinary research cluster "[Institut für Polymertechnologie](#)" at Bergische Universität Wuppertal

09/2002 professor (C4, since 2007 W3) for "Macromolecular Chemistry", Bergische Universität Wuppertal, Germany

10/2000 professor (C3) for "Polymer Chemistry", Universität Potsdam, Germany

Honors and Scientific Functions

2011 Odysseus Award (FWO, Belgium)

2006 organizer of the DAAD-funded Summer School "Frontiers in Polymer Science", IISc Bangalore, India

1998 Meyer-Struckmann Research Award.

