From DNA-Organized Multichromophores to Supramolecular Materials

Prof. Robert Häner
Department of Chemistry and Biochemistry
University of Bern, Switzerland
robert.haener@dcb.unibe.ch

The proper arrangement of multiple chromophores may lead to arrays with electronic properties that are largely different from the ones of the individual molecules. The bottom-up construction of structurally well-organized chromophore assemblies is a challenge with far-reaching implications in many scientific areas. Over many years, we have explored the assembly of multichromophores by using the DNA duplex as a supramolecular scaffold. The insight gained from DNA-based model studies led to the development of short amphiphilic oligomers, which are structurally related to DNA. Oligo-chromophores prepared from simplified versions of the natural DNA building blocks form supramolecular aggregates via self-assembly processes in aqueous medium. Morphological and electronic aspects of the obtained polymers as well as their elaboration into artificial light-harvesting complexes will be presented.