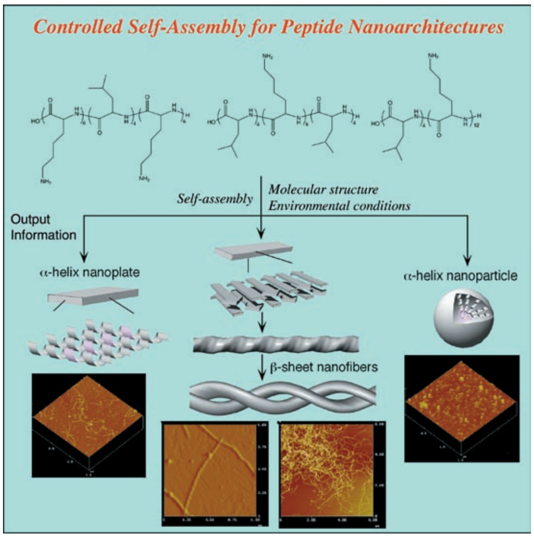
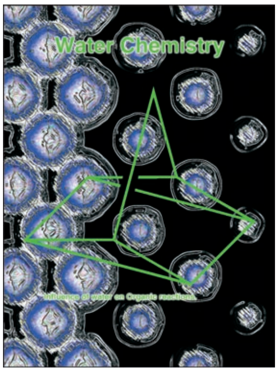
Fine tuning…

… of peptide sequence, reaction time, and solution pH enabled the construction of novel three-dimensional nanoarchitectures by controlled self-assembly of peptide building blocks (shown in the cover picture). Several self-assembled structures, such as β-sheet plates, β-sheet fibers, α-helix particles, and α-helix plates, were fabricated on the nanometer scale, and their conformation and self-assembling mechanisms studied. As suggested by N. Higashi et al. on page 1360 ff., this controlled self-assembly should elucidate the mechanism of peptide aggregation, and be useful in the design of novel biorelated nanomaterials.



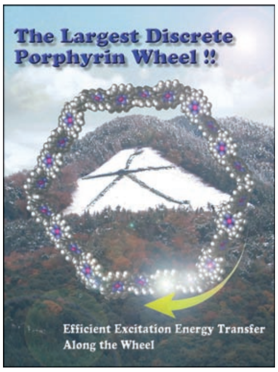


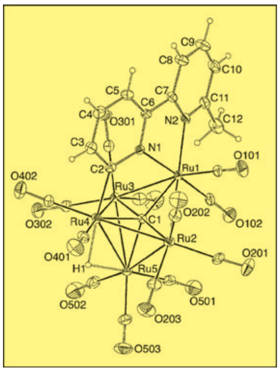
Solvent Effects

The influence of aqueous solutions on the rates of organic reactions, especially those for which water's polarity is not the only role, is discussed in the Concept article by M. C. Pirrung on page 1312 ff. For example, quadricyclane (depicted here) cycloaddition with an azodicarboxylate occurs at high concentration in an aqueous medium. The background picture is reproduced with permission from Cooper Baker.

Porphyrin Rings

In their Full Paper on page 1319 ff., T. Matsumoto, T. Kawai, D. Kim, A. Osuka et al. describe the synthesis of a giant wheel-like porphyrin array comprising six *meso–meso*-linked tetraporphyrins. The wheel has a diameter of approximately 7 nm and could well be the largest covalently linked porphyrin ring of purely synthetic origin. Excited-state dynamics are also reported.





Ruthenium Clusters

In their Full Paper on page 1529 ff., J. A. Cabeza et al. describe the ruthenium-cluster-mediated activation transformation of organic methyl groups into carbide ligands. Such reactions involve the unprecedented activation of all bonds (three C–H and one C–C) associated with the carbon atom of the methyl group.

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