FINITE NANOSTRUCTURES BY CONTROLLED HIERARCHICAL SELF-ASSEMBLY OF FOLDAMERS

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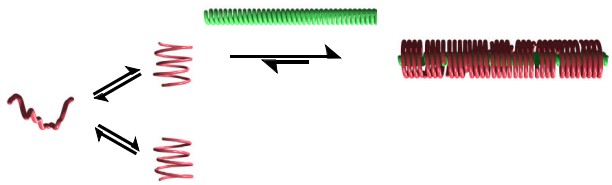
ABSTRACT

In order to create well-defined, finite nanostructures, similar to those in nature, one needs to make use of well-defined building blocks with predictable conformational behavior. Foldamers offer "easier to understand" models for understanding biological folding and self-assembly.[1,2] Synthetic helical foldamer systems based on aryl-rigid linker systems are well documented.[1,3,4] Most recent research is now aimed at forming advanced tertiary and quaternary structures, more advanced than mere helices (secondary structures).[2] In most cases, however, the characterization of the intermediates involved in the helical folding process is inadequate. If we are to form precise nanostructures by self-assembly, this hurdle must be surmounted. We describe a helical foldamer system based on a *para*-linked aryl-triazole helicity codon, with a well-characterized conformational transition processes. We demonstrate a controlled hierarchical self-assembly, using macromolecular templating, to prepare finite nanostructures, similar to the controlled self-assembly of the tobacco mosaic virus (TMV).[5]



Scheme 1. Templated self-assembly of foldamers

References:

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