Aromatic amide oligomers represent a new, distinct, and promising class of synthetic foldamers—oligomers that adopt stable folded conformations. Single helical structures are predictable, show unprecedented conformational stability, and constitute convenient building blocks to elaborate synthetic, very large (protein-sized) folded architectures (Fig. 1). They possess a high propensity to assemble into double, triple and quadruple helices, or to fold into sheet-like structures. Cavities can be designed within such synthetic molecules that enable them to act as artificial receptors and molecular motors. Water soluble analogues of these foldamers show promise in nucleic acid and protein recognition. This lecture will give an overview of the design principles of these functional molecular architectures and of their associated dynamics, including folding-unfolding equilibria, guest binding and release as well as translational and rotational motions.

Références


