Poster Presentation

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Structural effects of hinge length variation in a versatile foldamer backbone

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Foldamers are complex molecular scaffolds that mimic the form and function of biological molecules and are composed of simple repeating units.[1] Their potential applications include stereoselective and efficient organic catalysis mimicking the properties of enzymes, as well as bioreceptor mimics for new foldamer-protein interactions which could provide interesting possibilities for the medical industry.[2] In our previous studies we have investigated the folding properties of two oligoamides.[3] As the next step we prepared a series of aromatic oligoamide foldamers with several folding units and a hinge group between the units. The length of the hinge group is an important feature of the foldamer and understanding the properties the varying lengths is an integral step towards the preparation of foldamers with versatile conformational and functional properties. The prepared foldamers adopt a helical structure with multiple hydrogen bonds to single carboxyl oxygen. The structure is very compact and unlike many other aromatic foldamers, there is no void in the center of the structure resembling many of the biological helices formed in proteins. The diameter of the fold is roughly 11 Å, fairly close to the diameter of the biological alpha-helix (12 Å). The structure also has vast potential for a specific functionalization because of the aromatic rings, and desired properties can be produced with minimal variation in the secondary structure of the foldamer.

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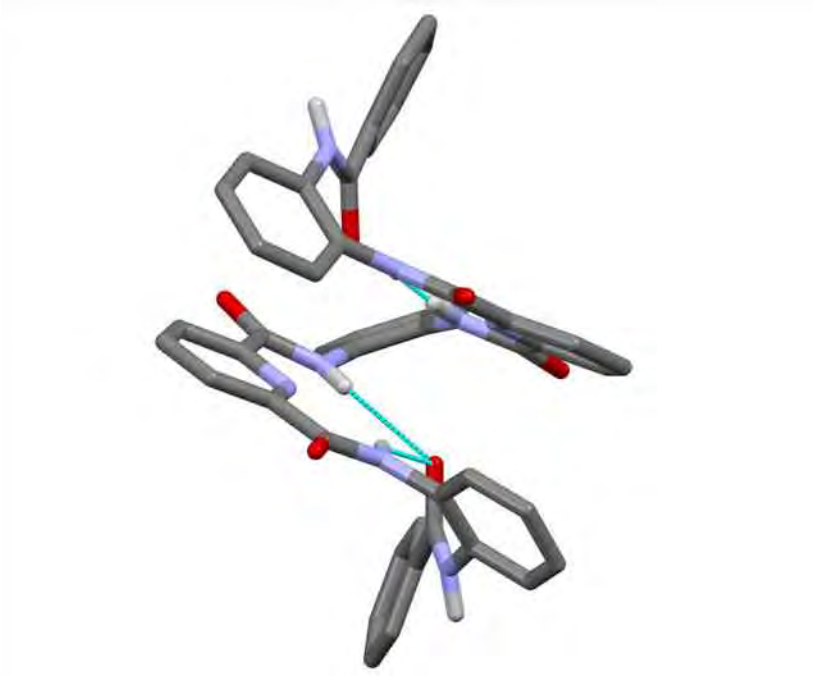

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