

Title: Foldable Polymers

Abstract: The engineering of well-defined structures reminiscent of Nature — in a sequence specific and monodisperse manner — is currently beyond the realization of synthetic chemists. Well-established routes to fabricate bio-inspired polymers are limited and rely mainly on single-chain polymer collapse, which, although elegant in approach, is limited in the complexity of polymer backbones that can be integrated within the target scaffold. This contribution will describe the controlled polymerization of structurally simple, yet complex monomers to engineer polymers containing secondary structures such as helices, sheets, or random coils that are capable of further assembly into localized tertiary structures. Our strategy takes these elements and, through high fidelity orthogonal molecular recognition processes, engineers three-dimensional (3D) architectures from well-defined secondary structure containing building blocks.

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