

DNA-templated assemblies of π -conjugated molecules

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DNA is a central molecule of Life, possessing a formidable information density. Inspired by biomolecular processes such as gene replication and transcription, researchers have utilized DNA as a template to construct, for example, sequence-controlled polymers, photonic wires, and delivery systems.[1-3] In this context, we will report our recent results on the supramolecular assemblies combining nucleic acids and π -conjugated molecules (small molecules or polymers), with insights into the templating effect, chirality, self-assembly, and cooperativity.[4,5] We discuss examples of DNA-templated assemblies of photoactive molecules, which can be utilized to modulate the helical assembly of multiple chromophores along DNA fibers.[3,6] Besides, we show that the supramolecular self-assembly of DNA and π -conjugated polymers is of interest to probe an enzymatic activity in a label-free, real time fashion.[7,8] Prospective applications of such templated supramolecular assemblies are discussed in the context of biosensing and siRNA delivery.

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