

A Survey of Computational Models of Self-Assembly

John Singleton and Toby Tobkin

Algorithmic self-assembly is a mechanism used in all designs of DNA-based computers and based on the self-assembling nature of DNA by hybridization. In this talk, we will present an introduction to the field of algorithmic self-assembly that was largely pioneered by Winfree in 1998. Specifically, we will motivate the study of the field of algorithmic self-assembly, provide descriptions of the Abstract Tile Assembly Model (aTAM) and the Kinetic Tile Assembly Model (kTAM), and give a simulated demonstration of computation using Winfree et al.'s Xgrow software.