

DNA 크로스오버가 오리가미 구조물의 강도에 미치는 영향에 대한 유한요소법 기반 민감도 분석

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Abstract

DNA origami is the most fitting nano-technology for synthesis of complex nano-structures. DNA crossover which ties DNA helices together are the main reason for the stable sustenance of origami structures with respect to other nano-scale structures. The mechanical properties of DNA crossovers have profound connection with structural rigidity, and it is a known fact that the rigidity changes depending on the arrangement of crossovers. It is possible to control the rigidity of origami structures for functionality and furthermore extends the field of DNA origami application. Here, we investigate the effect of crossovers on 2-Dimensional DNA structures varying crossover arrangement by sensitivity analysis based on finite element model. The crossover properties obtained from this analysis are compared with the existing experimental results.

Keywords : DNA origami, DNA crossover, finite element model, sensitivity analysis
