

Structural Color Produced by Designed DNA Nano-structures

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In this paper, we propose a method to realize structural color using DNA. The structural color is a color created by interference or diffraction caused by a minute structure such as a film or a groove, not by a pigment. Although structural colors can be artificially created by designing and creating nanostructures, conventional nanomachining equipment is very costly. DNA has been the focus of attention in the last 30 years as a material from which nanostructures can be designed and created. DNA nanostructures whose structure is uniquely determined from their base sequence by DNA complementarity are low in cost and can be designed and analyzed using a computer. The structural color can also discuss the electromagnetic properties of light using Maxwell's equations. This paper summarizes the realization of nanostructures by DNA and the analysis of structural colors by computer, and the attempt to realize structural colors by using DNA that has been subjected to DNA design and binding analysis by software.

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