Abstract Submitted
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Real Time Observation of DNA Nanotube Assembly[1] LISA VAL VERDE, FYGENSON GROUP TEAM — DNA nanotubes are of interest for applications ranging from nanofabrication to biophysical studies. The DNA Nanotubes used in this research are self-assembling structures composed of DNA double-crossover tiles. These tiles are simply two connected helices composed of five single stranded DNA oligomers. Each tile exposes four sticky ends responsible for the linkage between neighboring tiles. This linkage creates the nanotube lattice, with intrinsic curvature. The curvature orients each tile with a 60^o angle from the previous one so that six tiles make up the circumference of a nanotube. Nanotube stability depends on conditions such as ionic strength and temperature. A PCR machine is used to anneal the strands into nanotubes. A duplicated annealing process was constructed under a light microscope. PVP (polyvinyl prolidone) coated glass both confined the DNA nanotubes to a 2-3 μm focal plane and prevented them from sticking to the sample surface. By the time the tubes were long enough to track ($\geq$ 3 μm), they continued to lengthen primarily via end-to-end joining with some reaching lengths greater than 100 μm. These observations helped define more efficient annealing protocols that resulted in tubes with fewer imperfections.

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