SUPPORTING INFORMATION

Pyrene-Assisted Efficient Photolysis of Disulfide Bonds in DNA-Based Molecular Engineering

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Figures

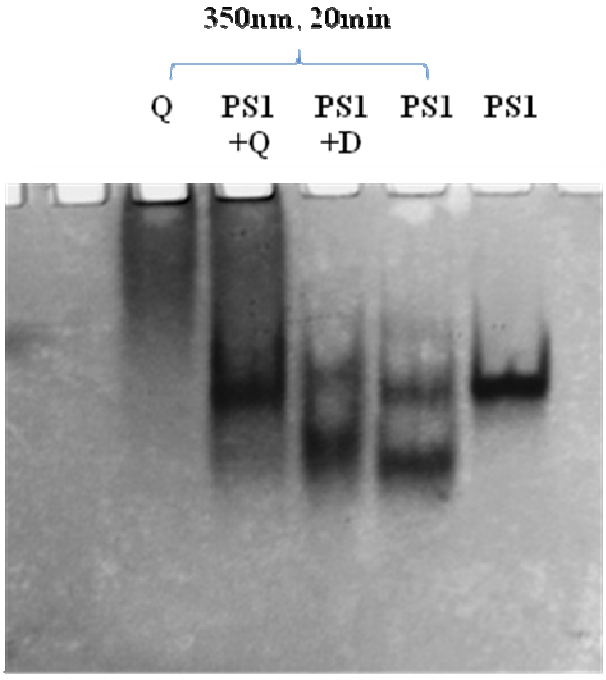

FIGURE S1. Radical cleavage mechanism study: Q stands for 1M *p*-benzoquinone, a radical scavenger substrate; D stands for 1M DMSO, an ·OH radical scavenger. The first 4 solutions

were irradiated simultaneously at 350nm for 20min; the photolysis of disulfides was blocked only by adding *p*-benzoquinone (no fast-moving component).

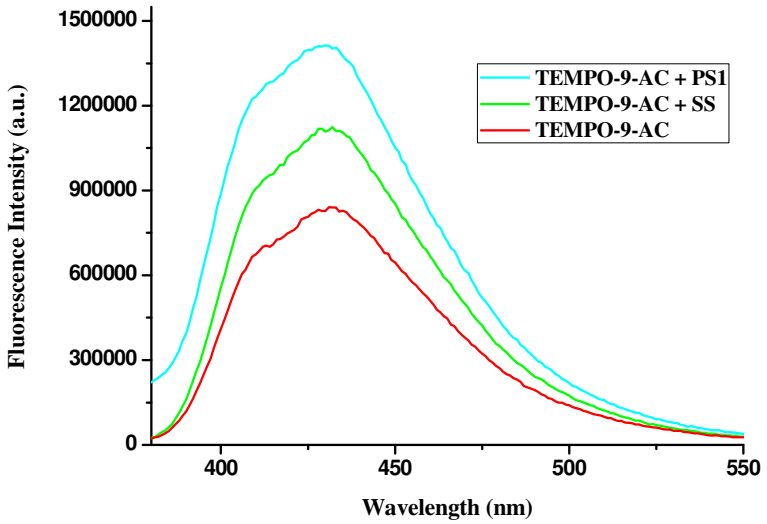

FIGURE S2. Radical cleavage mechanism study: radical indicator TEMPO-9-AC (4-((9-acridinecarbonyl) amino)-2, 2, 6, 6-tetramethylpiperidn-1-oxyl, purchased from Invitrogen Co.) can be used to detect hydroxyl radicals, superoxide and thiol radicals. 10 μM TEMPO-9-AC was added, followed by irradiation for 15min (0.3W), before fluorescence detection with an excitation wavelength of 361nm.

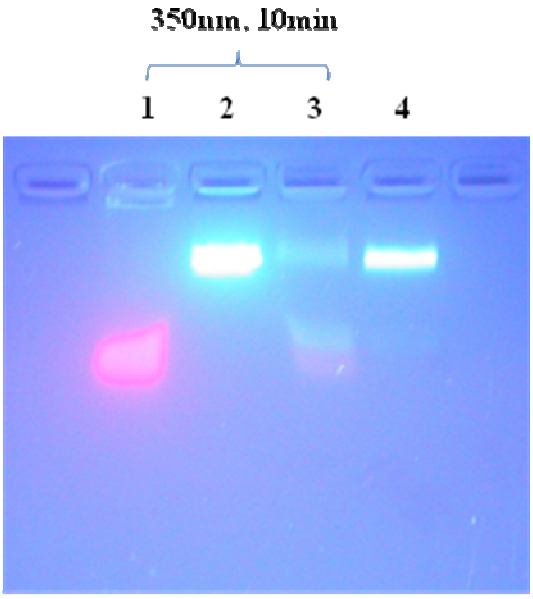

FIGURE S3. 4% agarose gel analysis of DNA-micelles: first three samples were irradiated at 350nm for 10min before imaging.

(Lane 1) 5'-/Pyr/-AAAAAAAATCACAGATGAGT-3': violet monomeric pyrene signal after 350nm irradiation.

(Lane 2) 5'-Lip-/Pyr/-AAAAAAAATCACAGATGAGT-3': green pyrene aggregate signal after 350nm irradiation.

(Lane 3) 5'-Lip-SS-/Pyr/-AAAAAAAATCACAGATGAGT-3': After 350nm irradiation, pyrene is present in both monomeric and aggregate forms.

(Lane 4) 5'-Lip-SS-/Pyr/-AAAAAAAATCACAGATGAGT-3': same as Lane 3 but without 350nm irradiation.

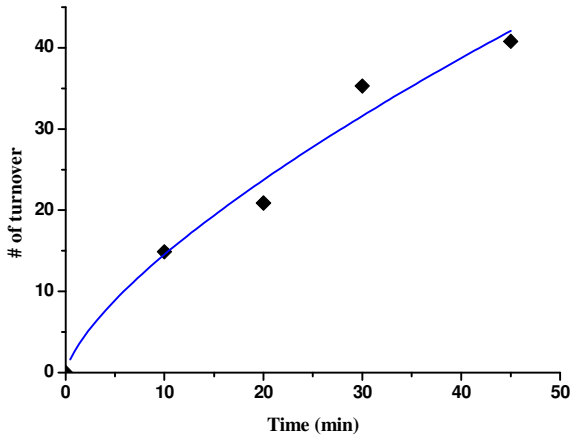

FIGURE S4. Catalytic activity of DNAzyme analog: confirmation of multiple turnovers by DNAzyme catalysis of disulfide cleavage with 10 μM substrate DNA shown in **Figure S3**.