

Supplementary Information for:
Controlling the size and adhesion of DNA droplets using
surface-enriched DNA molecules

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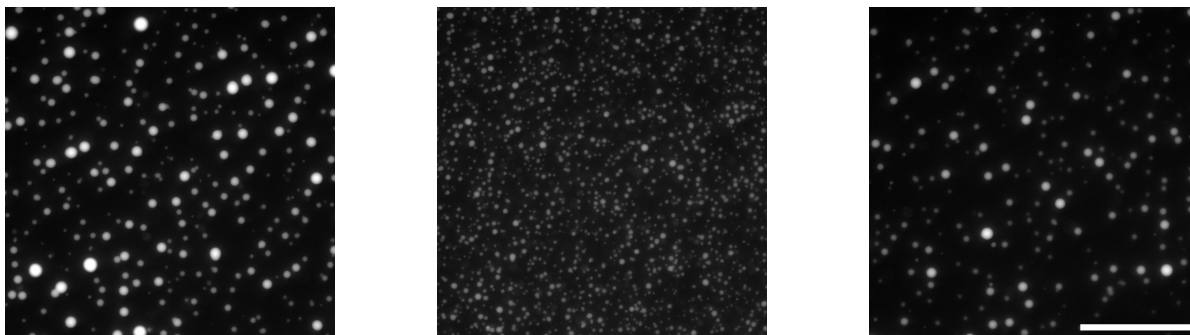
Table S1: Sequences of oligos used to assemble NSs. For fluorescent visualization, 5% of oligo 1 is replaced by oligo 1', which contains a Cy5 fluorescent tag, indicated with [c] in the table.

Name	Sequence
oligo 1	CGA TCG ACG CTG CAA CTG GAG GAT ACG AAG CCG TGG CAA GTC AGG TGC G
oligo 1'	[c] CGA TCG ACG CTG CAA CTG GAG GAT ACG AAG CCG TGG CAA GTC AGG TGC G
oligo 2	CGA TCG ACG GCT CAG TCG GTT TCC GAG AAC GTA TCC TCC AGT TGC AGC G
oligo 3	CGA TCG ACG AGC GTT GGA CAT GTA TCG AAC TCG GAA ACC GAC TGA GCC G
oligo 4	CGA TCG ACG CAC CTG ACT TGC CAC GGC AAC GAT ACA TGT CCA ACG CTC G

Table S2: Sequences of primers for synthesis of DNA surfactant, where [a] refers to an abasic site, and [c] refers to a Cy3 fluorescent tag. Forward primer 1 was used for all experiments, except the confocal visualization, for which forward primer 2 was used.

Name	Lambda DNA index	Sequence
Forward Primer 1	1136-1155	TCG ATC G [a] TAA CAC GCT CAC CAT GAA GC
Forward Primer 2	1136-1155	TCG ATC G [a][c] TAA CAC GCT CAC CAT GAA GC
Reverse Primer	1536-1517	GCT CGC AGA GAT AAA ACA CG

a)



b)



Figure S1: Fluorescent micrographs of NS droplets in solutions containing (left) only $2 \mu\text{M}$ NS, (center) $2 \mu\text{M}$ NS and long DNA with complementary sticky end that would bind to NS arms, and (right) $2 \mu\text{M}$ NS and long DNA with non-binding sticky ends. The scale bar is $100 \mu\text{m}$. b) Images of the same solutions as in (a) near a hydrophilic (BSA coated) surface. The scale bar is $40 \mu\text{m}$. In both sets of images, the effects on adhesion and droplet size only occurs when the long DNA carries specific binding ends, indicating that the effects are not due to non-specific coating by long DNA.

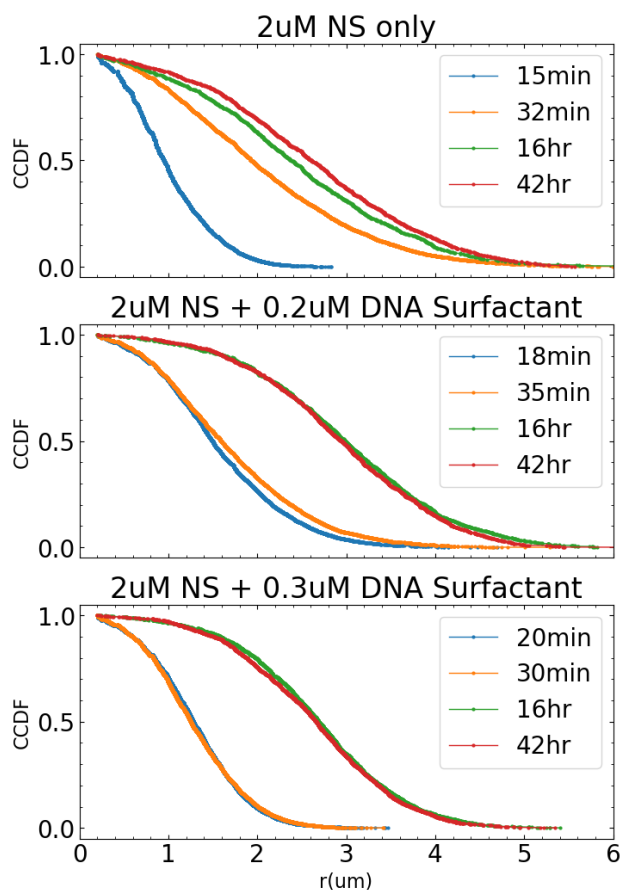


Figure S2: Time-course of droplet size distributions (CCDF), for the solutions indicated. As discussed in the methods, solutions were mixed and incubated on a rotator for 2 hours prior to addition to a flow cell; the time indicated here in the legends refers to the time since addition to the flow cell. While the NS-only solution reaches a stable droplet distribution relatively rapidly, addition of the surfactant significantly slows droplet growth, which we attribute to coalescence that is impeded by the surfactant layer. That said, the surfactant effect is not absolute, and eventually even surfactant-laden solutions result in droplets of similar size as NS-only solutions.