

Characterizing the non-crosslinked aggregation of DNA-modified gold nanoparticles: effects of DNA length and terminal base pair

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Supporting Information

Supporting figures

Figure S1. The spectrum of a mixture of probe-A-modified 15-nm GNPs and complementary target DNA

Figure S2. The spectrum of probe-A-modified 100-nm GNPs.

Figure S3. Testing NCL-GNP-aggregation reversibility.

Figure S4. Dot images of temperature-dependent NCL-GNP aggregation.

Figure S5. The effects of various terminal sequences.

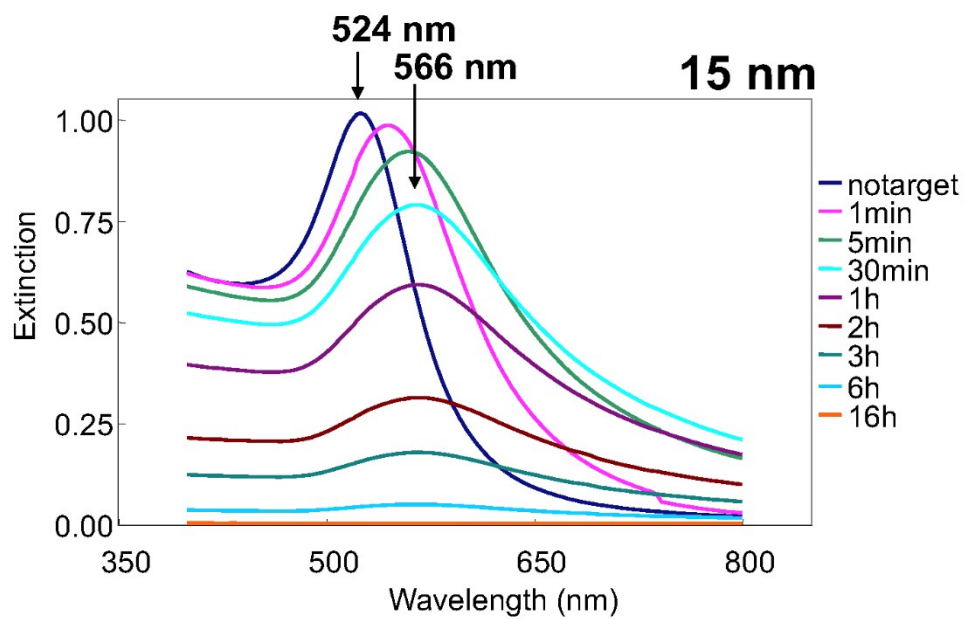


Figure S1. The spectrum of a mixture of probe-A-modified GNPs and complementary target DNA (Target A₁) as a function of time. GNP diameter: 15 nm. Concentrations: probe DNA and target DNA, 500 nM; NaCl, 1.0 M; Tween 20, 0.01%.

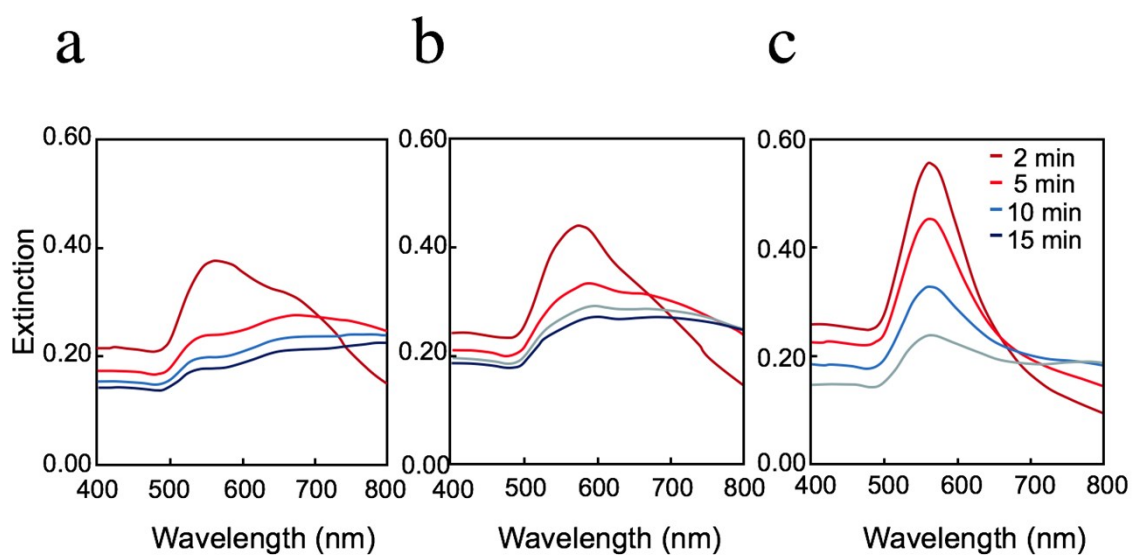


Figure S2. The spectrum of probe-A-modified 100-nm GNPs as a function of time. (a) Probe-A-modified GNPs. (b) Probe-A-modified GNPs and complementary target DNA (Target A₁). (c) Probe-A-modified GNPs and single-base-mismatched target DNA (Target A₈).

Concentrations: target DNA, 100 nM; NaCl, 1.0 M; Tween 20, 0.01%.

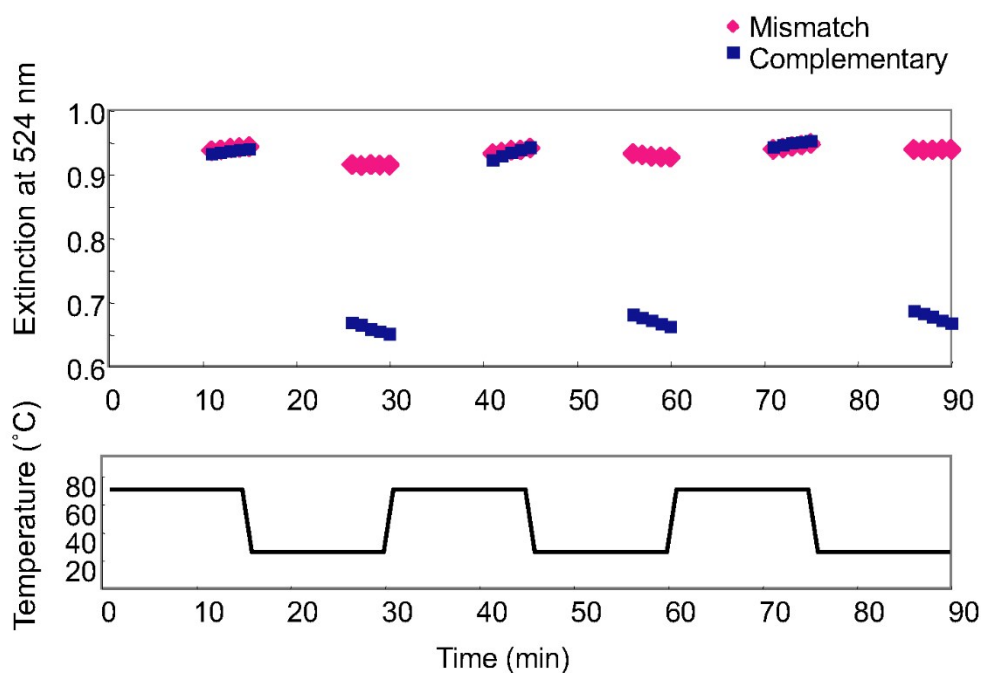


Figure S3. Testing NCL-GNP-aggregation reversibility. GNP diameters: 15 nm. Concentrations: probe DNA and target DNA, 500 nM; NaCl, 1.0 M; Tween 20, 0.01%. The temperature was cycled between 25 °C and 70 °C. Temperature-dependent aggregation was observed in the presence of the complementary target in three replicate experiments. The extinction at 524 nm of the mismatched samples did not change during these experiments.

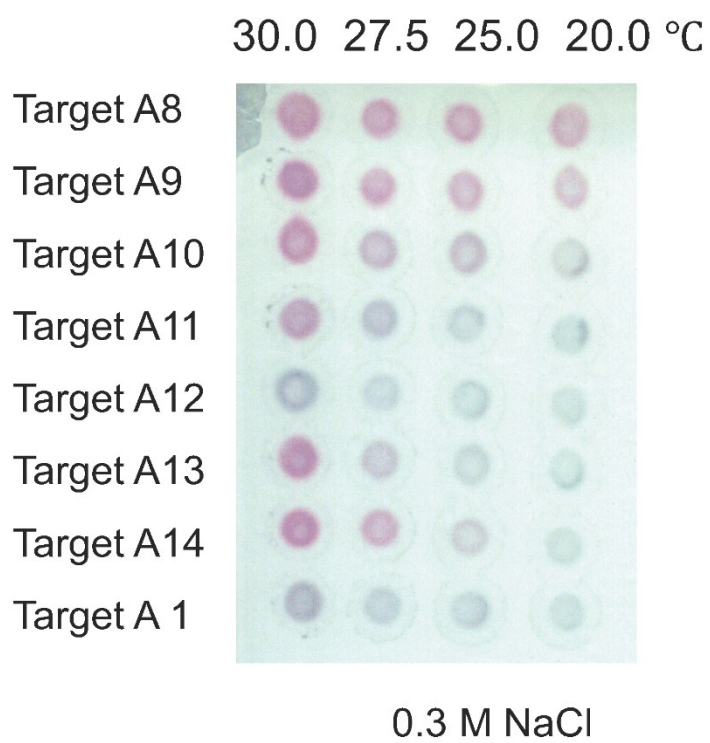


Figure S4. Dot images of temperature-dependent NCL-GNP aggregation. GNP diameters: 15 nm.

a

Au-S-5'-CAG GAC AGG CAC AAA CAC-3'5'- TAC GCC ACC AGC T X Y -3'
 3'-GTC CTG TCC GTG TTT GTG ----- ATG CGG TGG TCG A X Y -5'

b

	CG5'	CC5'	CA5'	CT5'	C5'
GC3'	40.0	<0	<0	<0	9.0
GG3'	27.5	25.0	27.0	<0	9.5
GT3'	4.5	<0	21.0	<0	<0
GA3'	5.0	<0	<0	13.5	<0
G3'	8.0	<0	<0	<0	25.5

	GG5'	GCS'	GA5'	GT5'	G5'
CC3'	32.0	<0	<0	<0	<0
CG3'	<0	27.0	25.0	<0	11.0
CT3'	<0	<0	14.5	<0	<0
CA3'	<0	<0	<0	9.5	<0
C3'	<0	<0	<0	<0	32.0

	TG5'	TCS'	TA5'	TT5'	T5'
AC3'	37.0	<0	<0	<0	<0
AG3'	23.0	30.5	21.5	<0	<0
AT3'	<0	<0	27.5	<0	<0
AA3'	<0	<0	<0	12.0	<0
A3'	<0	<0	<0	6.0	<0

	AG5'	ACS'	AA5'	AT5'	A5'
TC3'	37.5	<0	<0	<0	<0
TG3'	6.5	26.0	13.5	<0	<0
TT3'	<0	<0	25.5	<0	6.0
TA3'	<0	<0	<0	<0	<0
T3'	<0	<0	<0	<0	21.5

NaCl 0.5 M


 complementary

Figure S5. The effects of various terminal sequences. GNP diameters: 15 nm. (a) Sequences of the GNP surface probe and the two free DNAs. (b) Listing the aggregation-commencement temperatures.