Supporting Information for

Accelerated Non-Crosslinking Assembly of DNA-Functionalized Nanoparticles in Alcoholic Solvents: Towards Application in Identification of Clear Liquors

Luyang Wang,[a] Guoqing Wang,*[a, b] Yali Shi,[a] Lan Zhang,[a] Ran An,[a] Tohru Takarada,[c] Mizuo Maeda[c] and Xingguo Liang[a, b]

[a]*College of Food Science and Engineering, Ocean University of China, 5 Yushan Road, Qingdao 266003, China*

Email: gqwang@ouc.edu.cn

[b]*Laboratory for Marine Drugs and Bioproducts, Pilot National Laboratory for Marine Science and Technology (Qingdao), Qingdao 266237, China*

[c]*Bioengineering Laboratory, RIKEN Cluster for Pioneering Research, 2-1 Hirosawa, Wako, Saitama 351-0198, Japan*

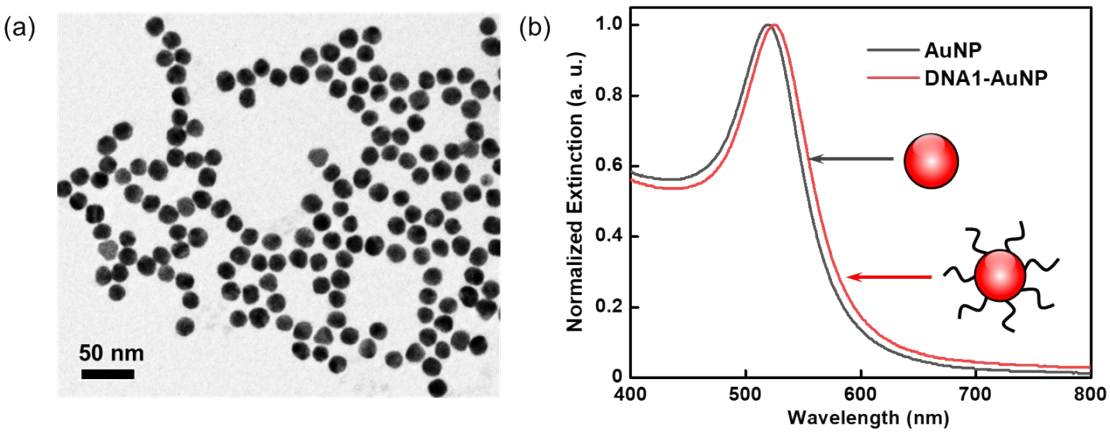
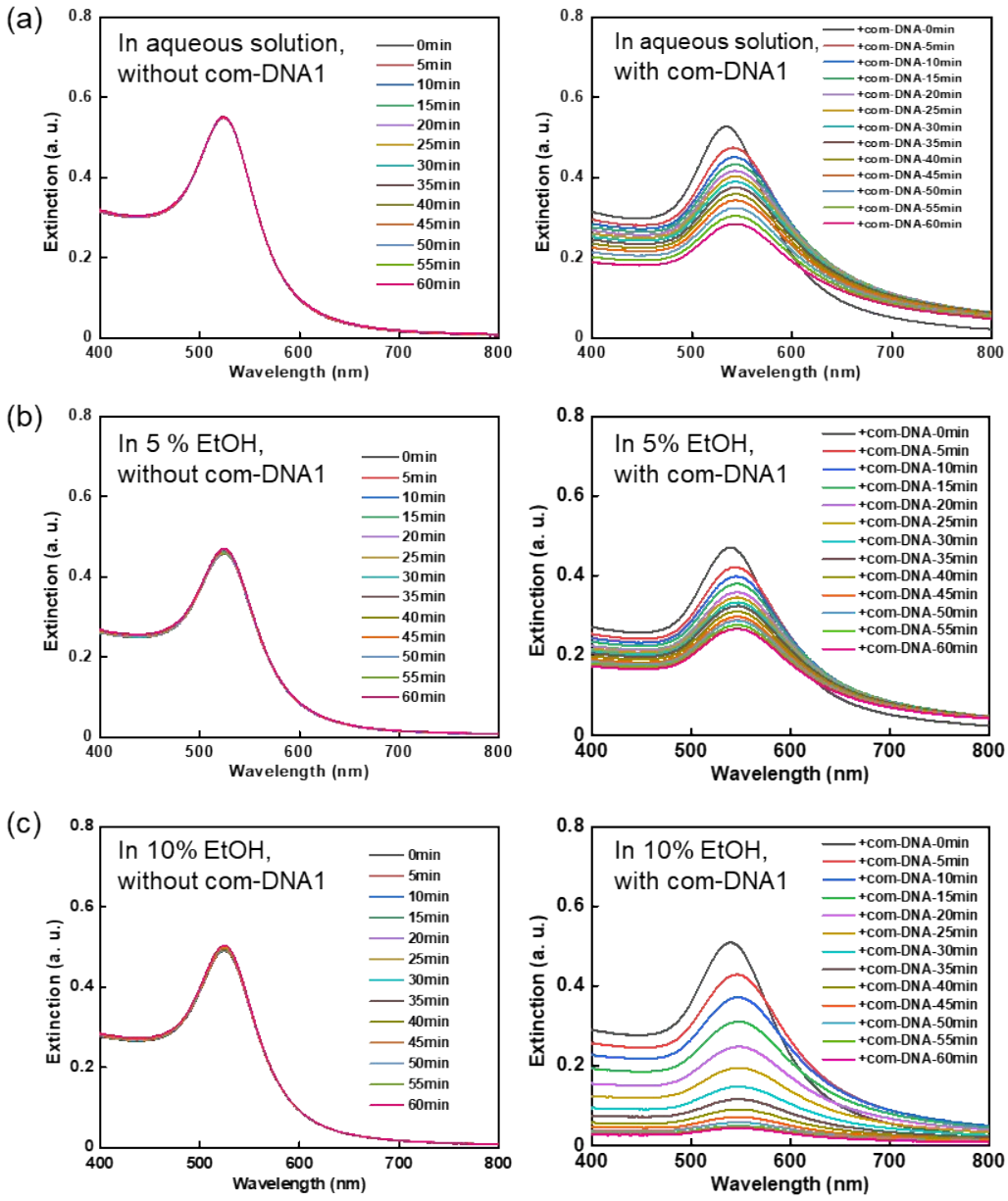


Fig. S1 (a) TEM image of the AuNPs adopted in this study. (b) Extinction spectra of AuNPs before and after functionalization with DNA1 (DNA1–AuNPs).

Table S1. Zeta potential analysis for the DNA1–AuNPs at low ionic strength in different solvents, and that in the absence and presence of com-DNA1 at high ionic strength.

Solvent	**Before NaCl addition**	**Without com-DNA1 (~0.97 M NaCl)**	**With com-DNA1 (~0.94 M NaCl)**
Water	-14.7 mV	-7.2 mV	-9.9 mV
5% EtOH	-17.3 mV	-9.0 mV	-3.5 mV
20% EtOH	-12.6 mV	-16.0 mV	-10.5 mV
40% EtOH	-17.1 mV	-6.6 mV	-3.2 mV



To be continued

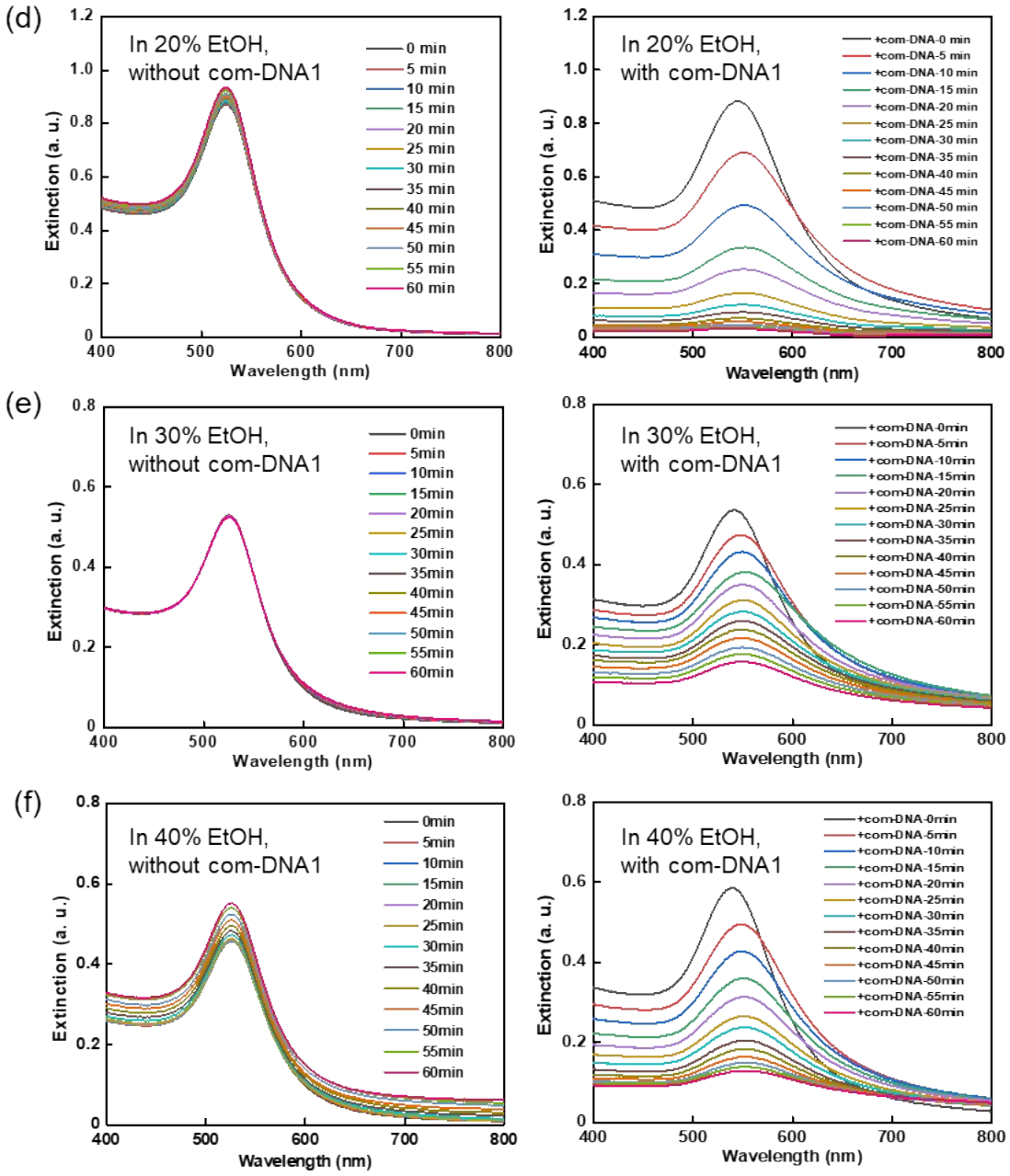


Fig. S2 Time-dependent change of the extinction spectrum of DNA1–AuNPs in 10 mM PB solutions (pH 7.4) containing 0.97 M NaCl before (left) and after (right) addition of com-DNA1 in 0% (a), 5% (b), 10% (c), 20% (d), 30% (e), and 40% (f) EtOH. A final AuNP concentration of 5 nM was used in all the experiments.

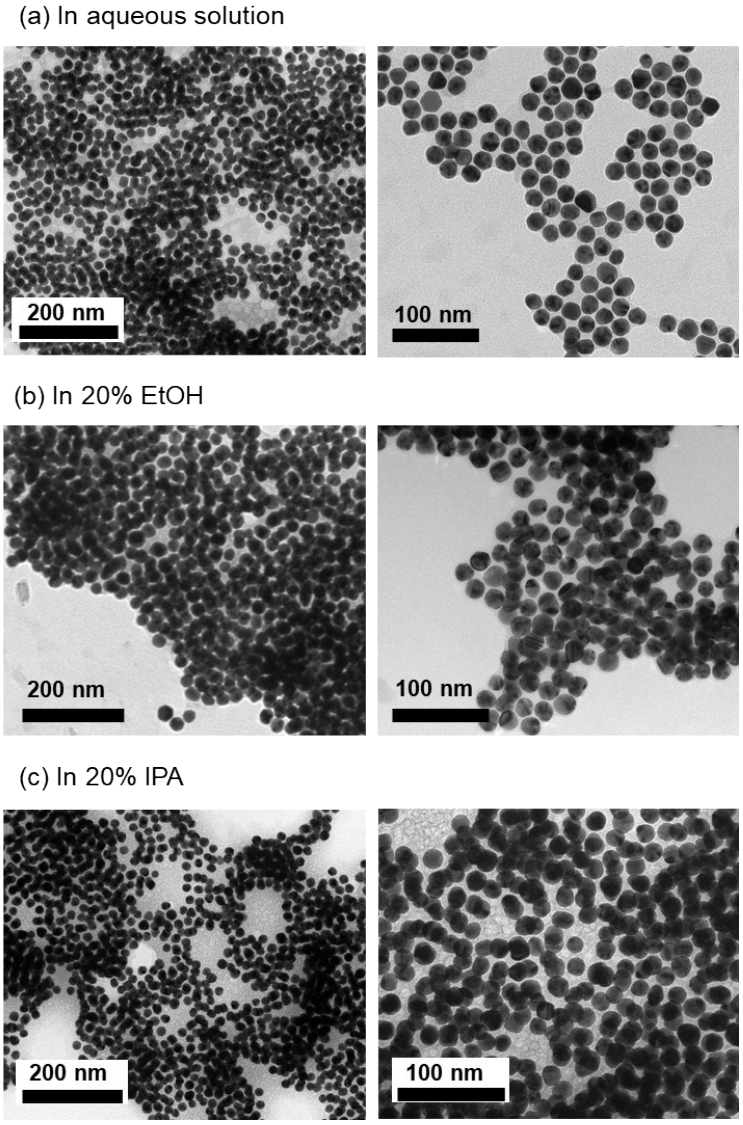
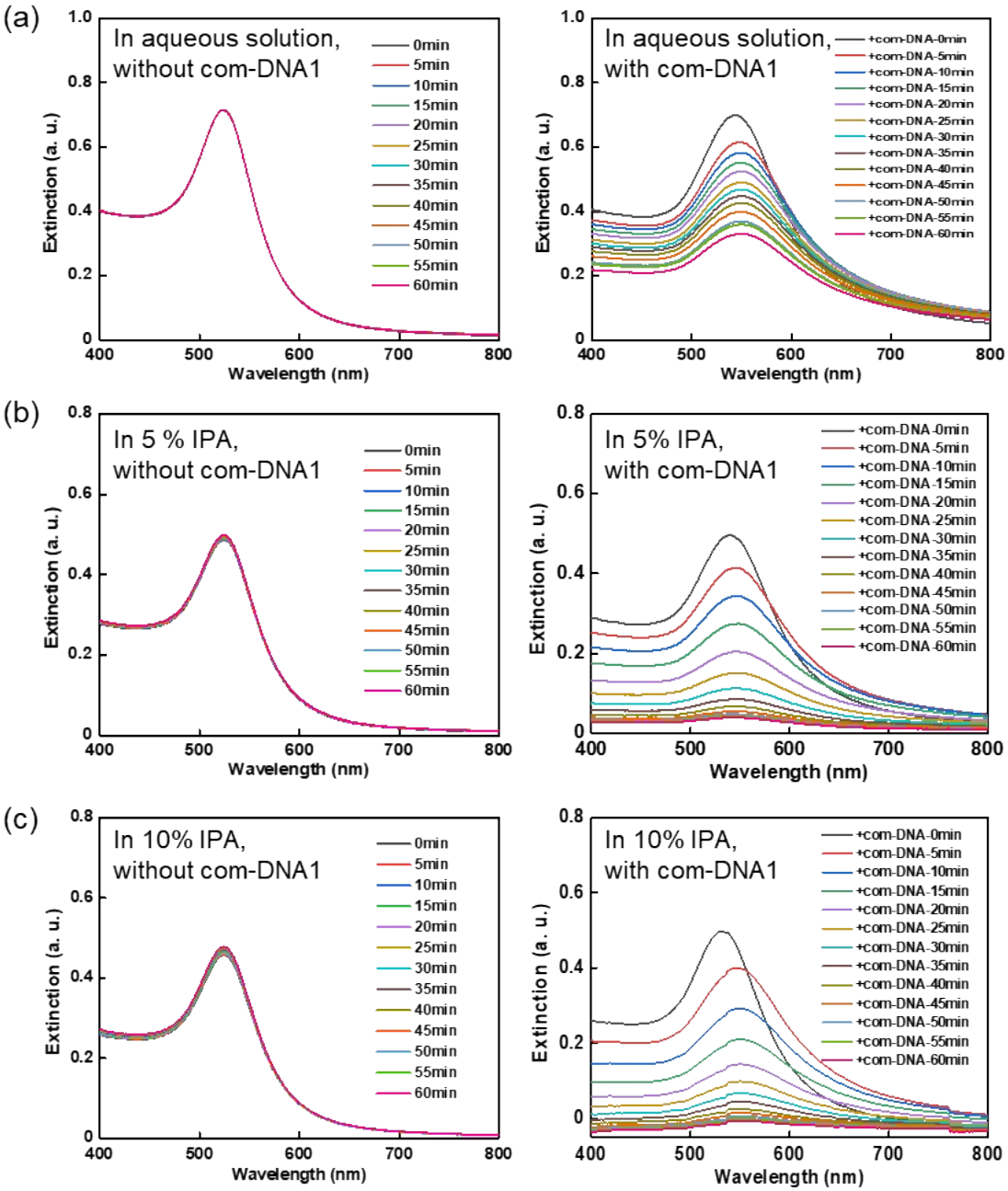


Fig. S3 TEM images of DNA1–AuNPs upon hybridization to com-DNA1 in aqueous solution (a), 20% EtOH (b), and 20% IPA (c).



To be continued

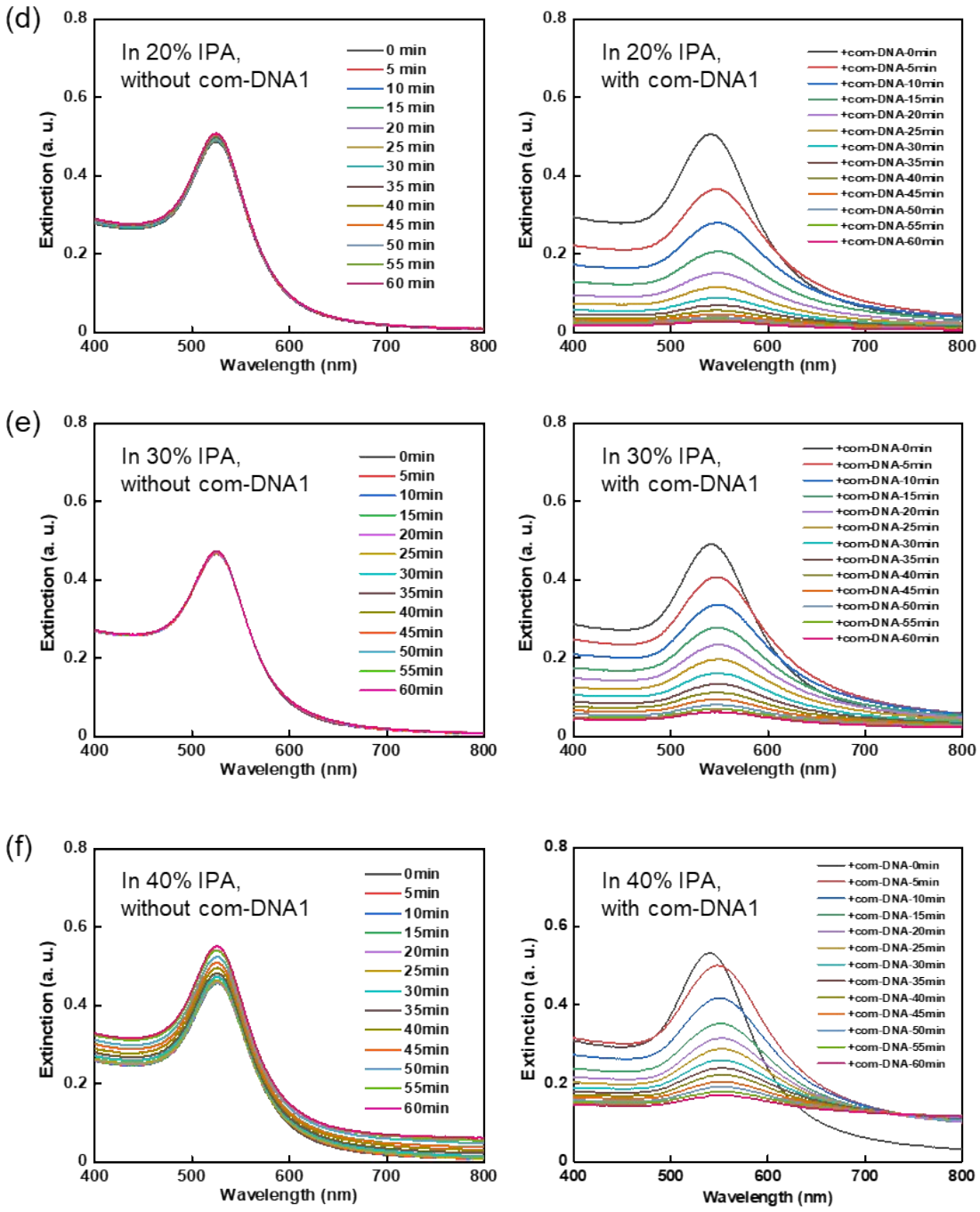


Fig. S4 Time-dependent change of the extinction spectrum of DNA1–AuNPs in 10 mM PB solutions (pH 7.4) containing 0.97 M NaCl before (left) and after (right) addition of com-DNA1 in 0% (a), 5% (b), 10% (c), 20% (d), 30% (e), and 40% (f) IPA. A final AuNP concentration of 5 nM was used in all the experiments.

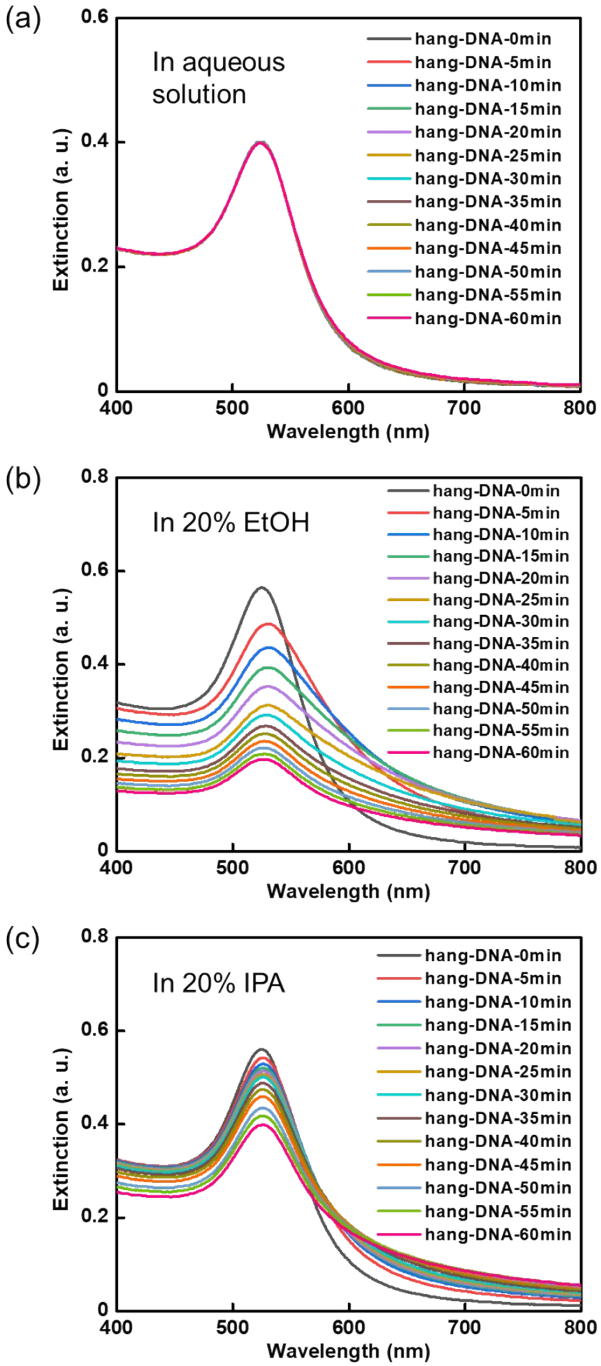


Fig. S5 Time-dependent change of the extinction spectrum of DNA1–AuNPs in 10 mM PB solutions (pH 7.4) containing 0.97 M NaCl after addition of hang-DNA1 in the aqueous solution (a), 20% EOH (b), and 20% IPA (c). A final AuNP concentration of 5 nM was used in all the experiments.

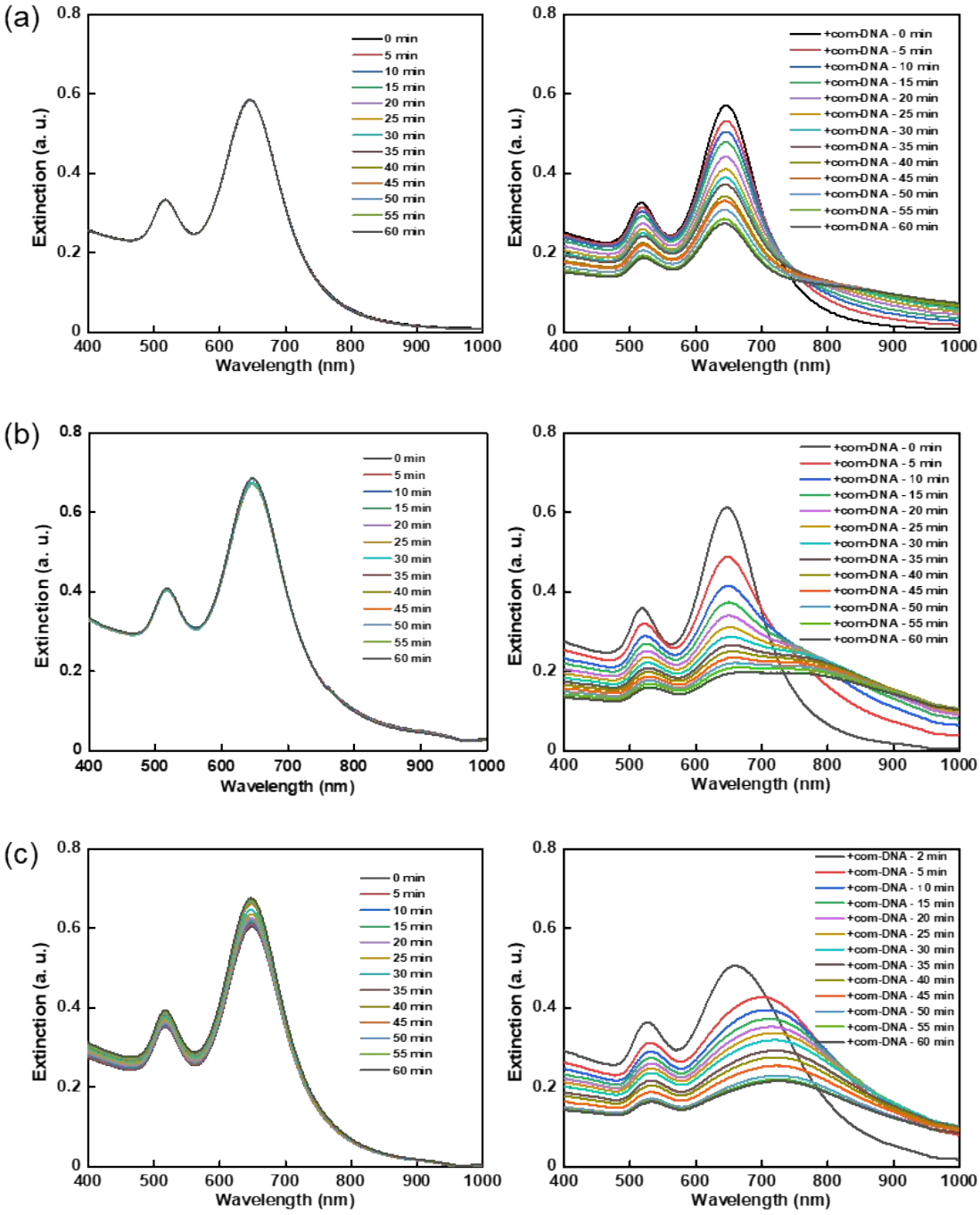


Fig. S6 Time-dependent change of the extinction spectrum of DNA1–AuNRs before (left) and after (right) hybridization to com-DNA1 in the aqueous solution (a), 20% EtOH (b), and 20% IPA (c). A final AuNR concentration of 0.8 nM was used in all the experiments.

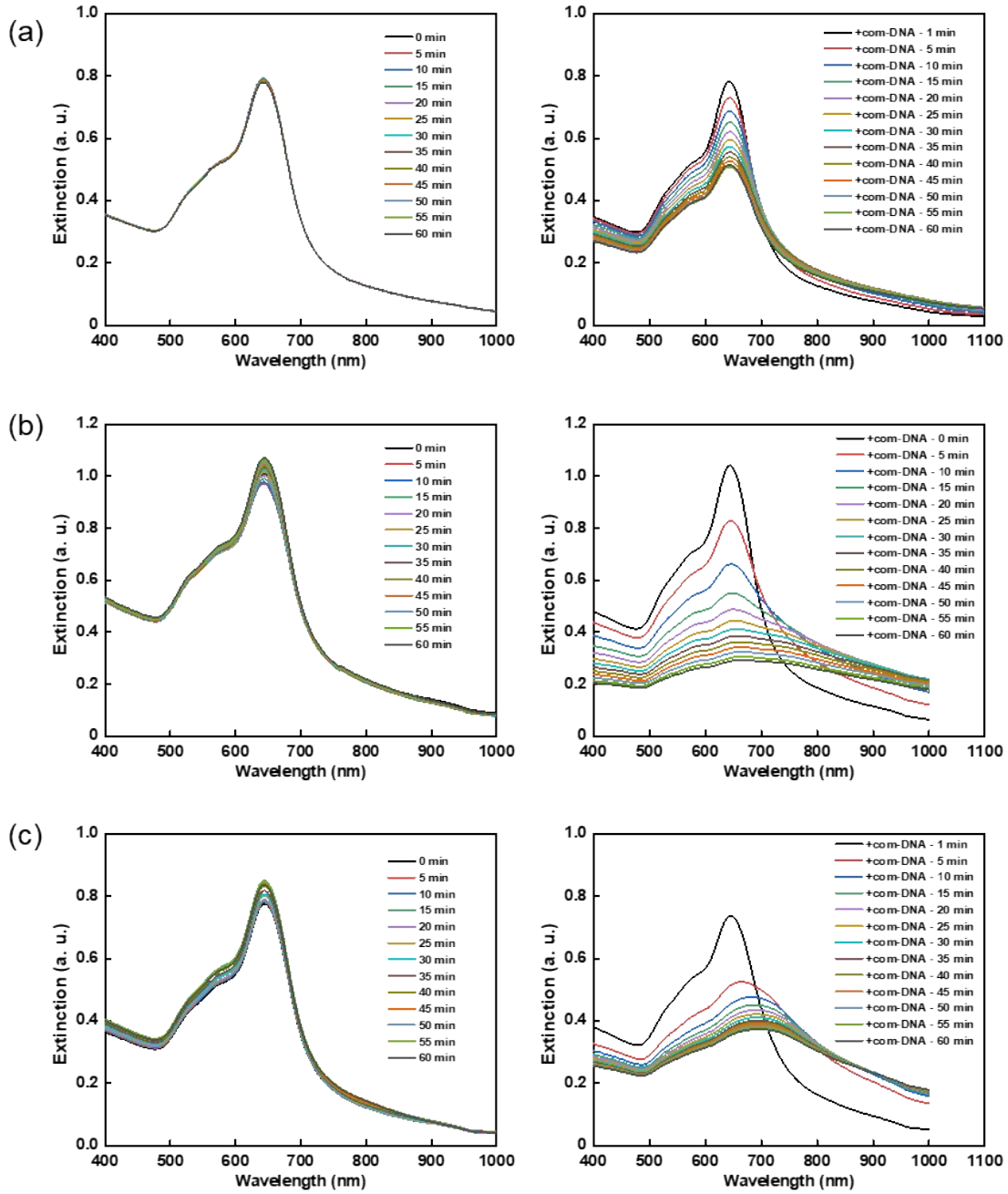


Fig. S7 Time-dependent change of the extinction spectrum of DNA1–AuNTs before (left) and after (right) hybridization to com-DNA1 in the aqueous solution (a), 20% EtOH (b), and 20% IPA (c). A final AuNT concentration of 0.8 nM was used in all the experiments.

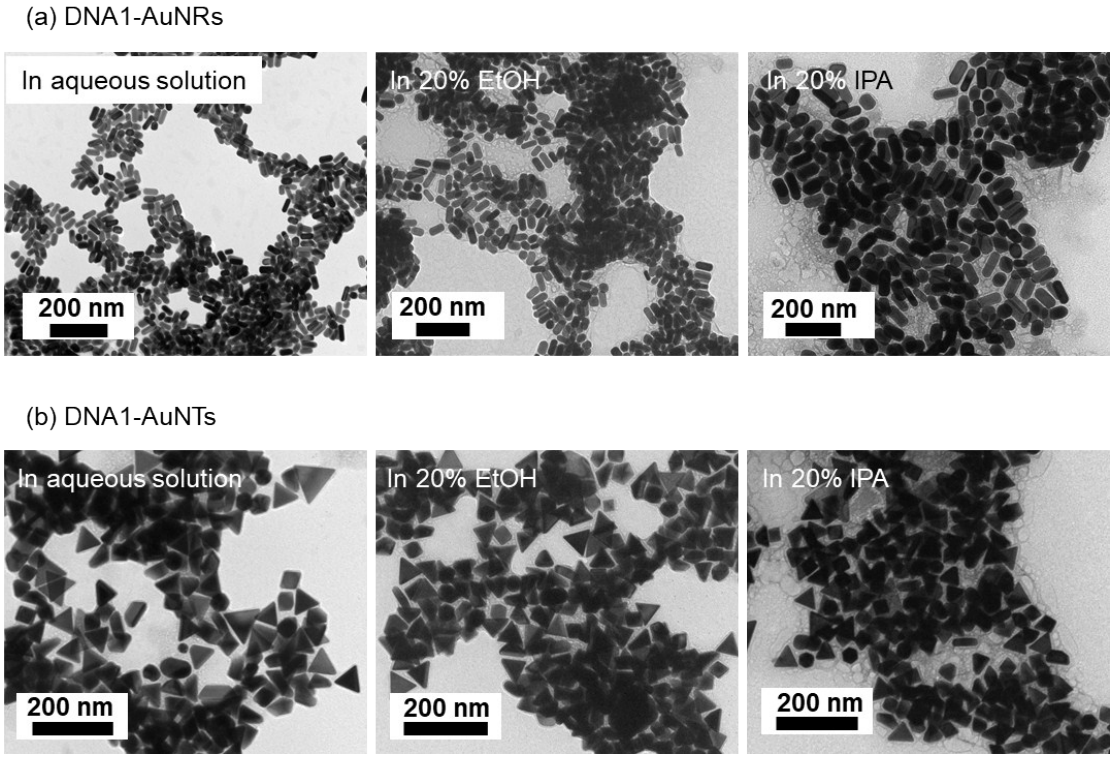


Fig. S8 TEM images of DNA1–AuNRs (a) and DNA1–AuNTs (b) upon hybridization to com-DNA1 in the aqueous solution (left), 20% EtOH (center), and 20% IPA (right).

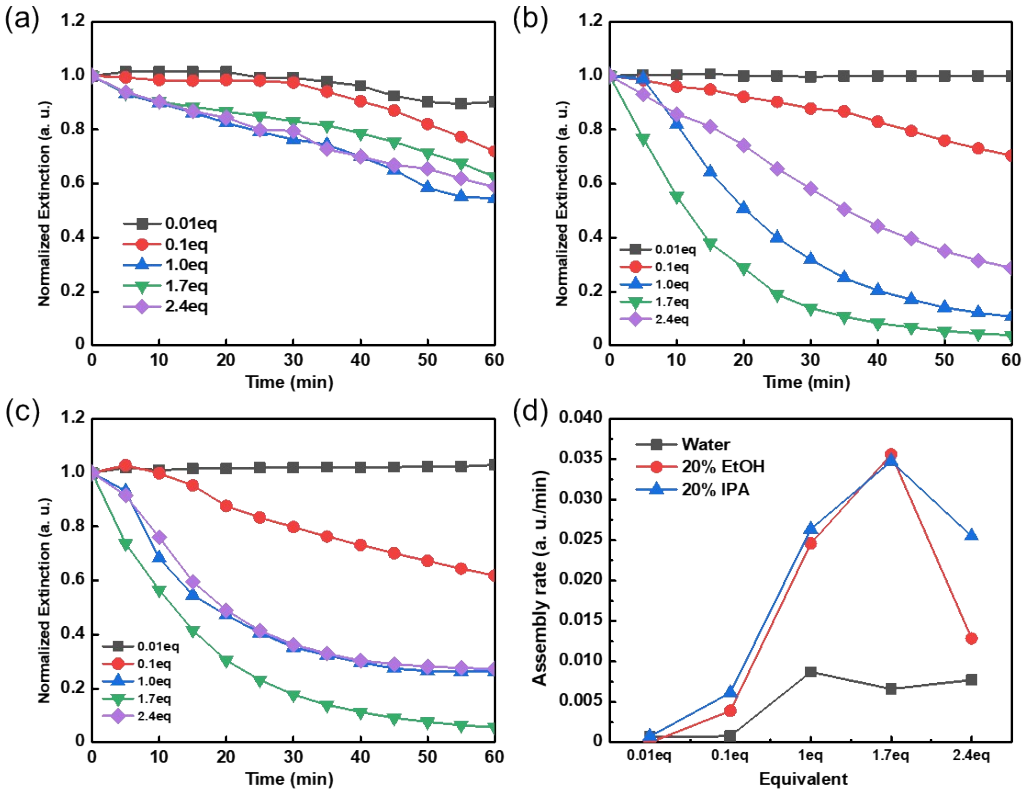


Fig. S9 Target concentration dependence of non-crosslinking assembly of DNA–AuNPs. (a–c) Time course of the normalized extinction change at 550 nm for DNA1–AuNPs upon addition of com-DNA1 at various equivalents in the aqueous solution (a), 20% EtOH (b), and 20% IPA (c). (d) Relationship between the assembly rate of DNA1–AuNPs estimated by calculating the extinction decrease in the first 20 min and the equivalent of added com-DNA1 in the aqueous solution and the alcoholic solutions.