ELECTRONIC SUPPLEMENTARY INFORMATION

Dielectrophoretic trapping of nanosized biomolecules on plasmonic nanohole arrays for biosensor applications: Simple fabrication and visible-region detection

Satoko Fujiwara, [a] Misaki Hata, [b] Ikumi Onohara, [b] Daiki Kawasaki, [a] Kenji Sueyoshi, [a,c] Hideaki Hisamoto, [a] Masato Suzuki, [b] Tomoyuki Yasukawa [b] and Tatsuro Endo [*a]

[a]Department of Applied Chemistry, Graduate School of Engineering, Osaka Metropolitan University, 1-1 Gakuen-cho, Naka-ku, Sakai, Osaka 599-8531, Japan.

[b]Graduate School of Material Science, University of Hyogo, 3-2-1 Kouto, Kamigori, Ako, Hyogo 678-1297, Japan.

[c]Japan Science and Technology Agency (JST), Precursory Research for Embryonic Science and Technology (PRESTO) 4-1-8 Honcho, Kawaguchi, Saitama 332-0012, Japan.

[d]Advanced Medical Engineering Research Institute, University of Hyogo, Hyogo, Japan.

* Corresponding author: Tatsuro Endo (t_endo@omu.ac.jp)

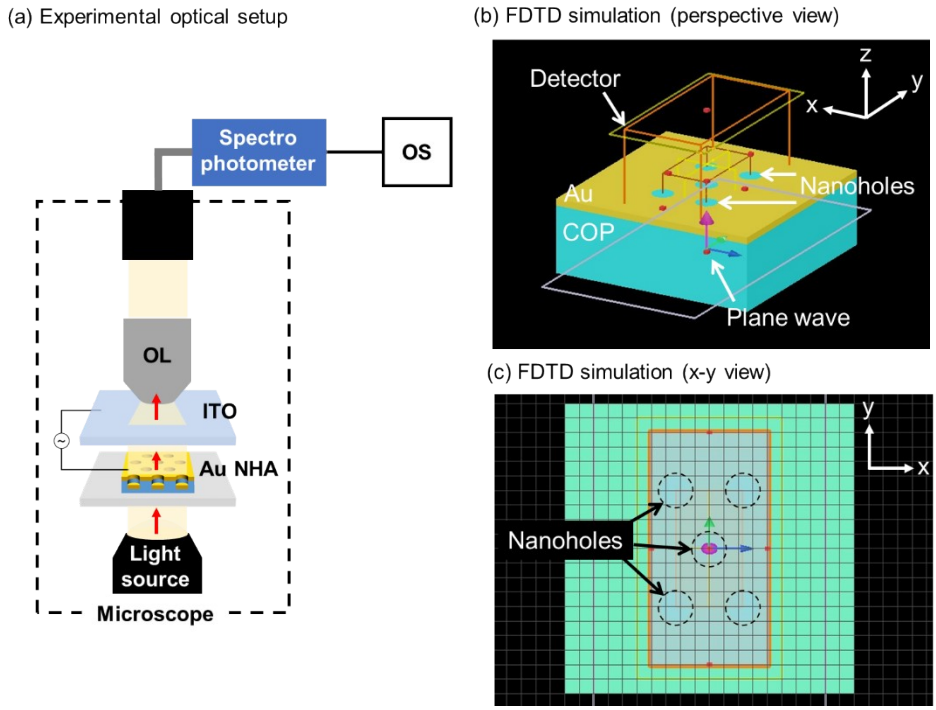

Fig. S1: (a) Schematic of the optical setup used to measure the transmission spectra. (b) and (c) Overview images of the FDTD simulation model of the Au NHA.

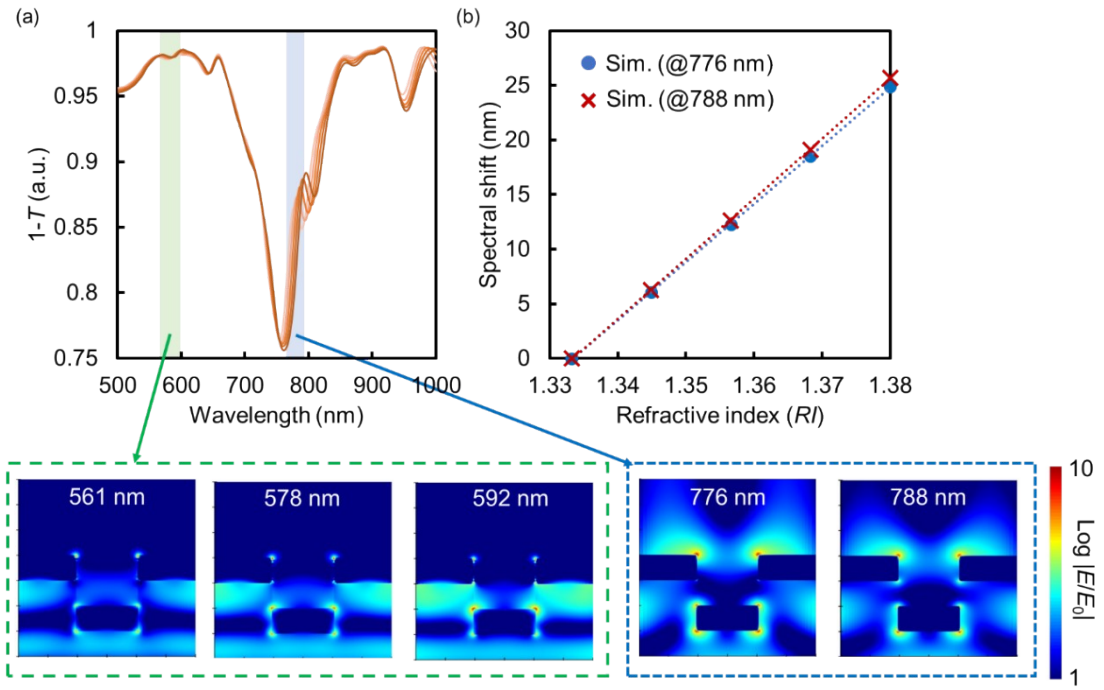

Fig. S2: (a) Absorption spectra with respect to an *RI* change and EM fields of the Au NHA. (b) Peak and dip shifts with respect to the *RI* at 776 and 788 nm simulated using the FDTD method. □

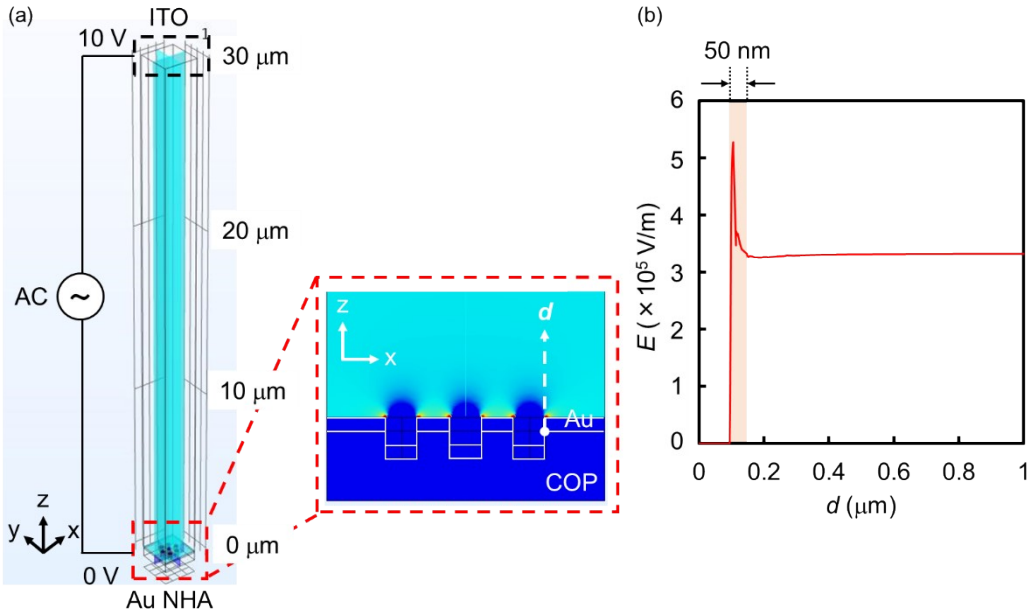

Fig. S3: ES field of the Au NHA-based DEP device obtained using FEM: (a) perspective and x-z views, (b) electrostatic field intensity (E) versus distance (d) from the bottom of the Au layer.

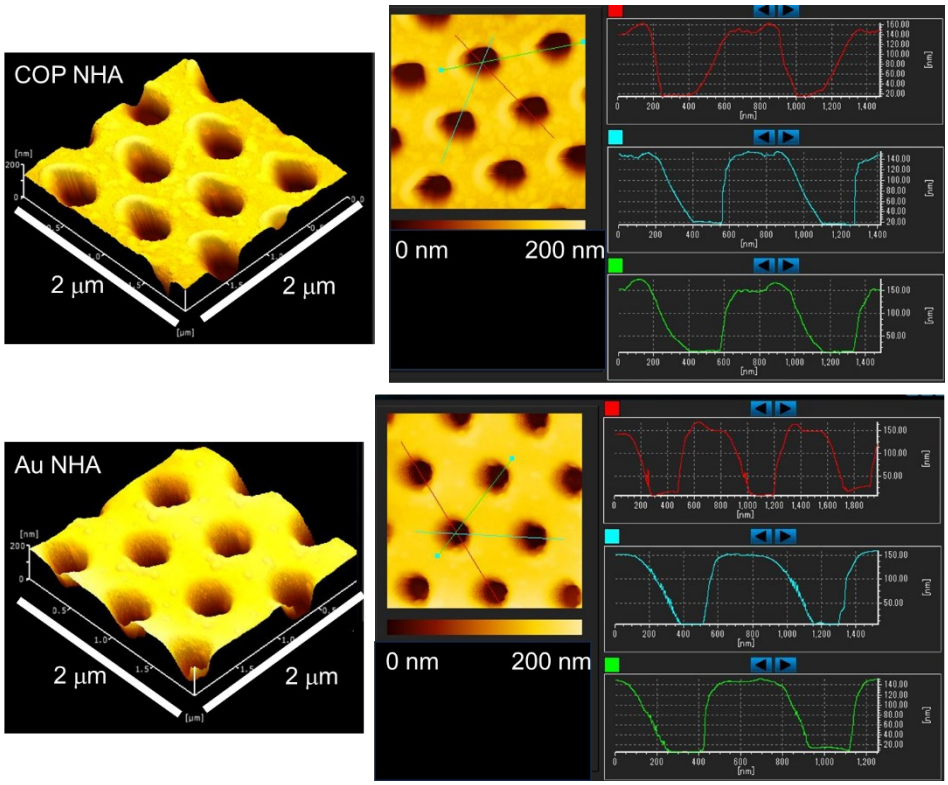

Fig. S4: AFM images of the nanohole-imprinted COP film and the fabricated Au NHA.

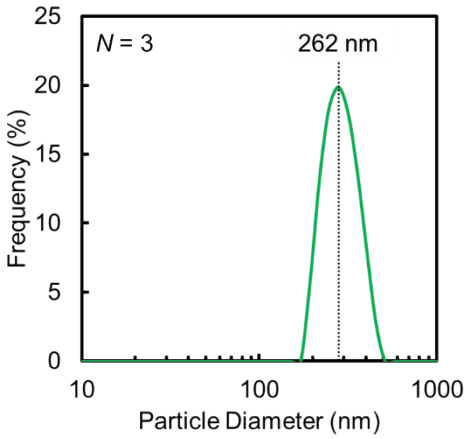

Fig. S5: Size distribution of the PS NPs measured using dynamic light scattering (DLS).

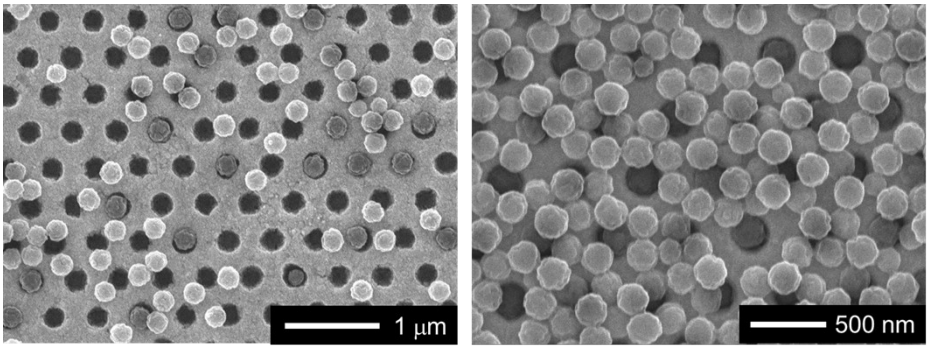

Fig. S6: SEM images of the trapped PS NPs by DEP after drying the sample dispersion.

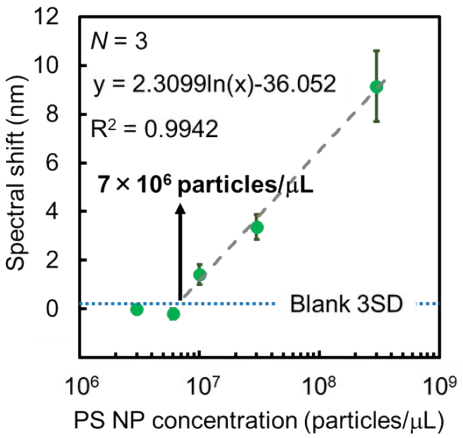

Fig. S7: Calibration curve of the PS NPs trapped on the Au NHAs.

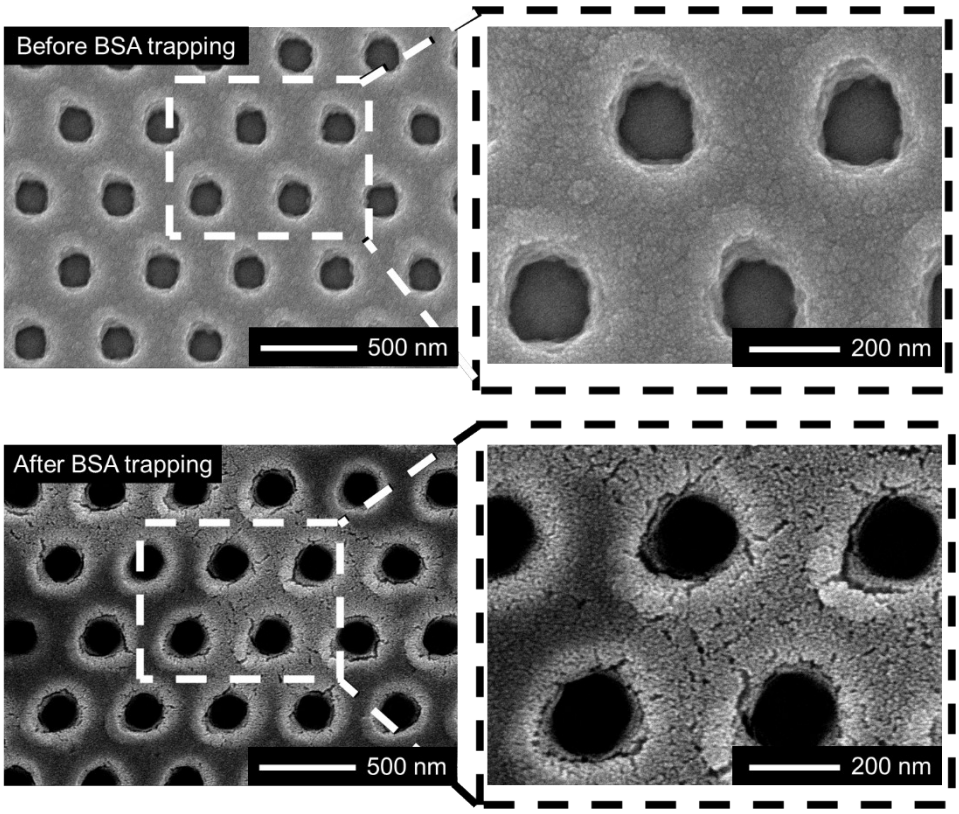

Fig. S8: SEM images of before and after the trapped BSA by DEP after drying the sample solution.