Electronic Supplementary Information

Synthesis of Multifunctional Plasmonic Nanopillar Array Using Soft Thermal Nanoimprint Lithography for Highly Sensitive Refractive Index Sensing

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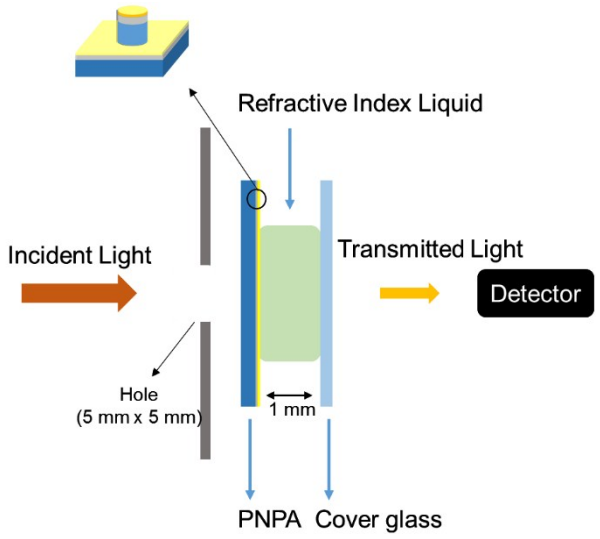

Fig. S1 Experimental setup for measuring the transmission spectrum of the PNPA for various refractive index liquids. The experiments were performed with a SolidSpec-3700DUV spectrophotometer (SHIMADZU).

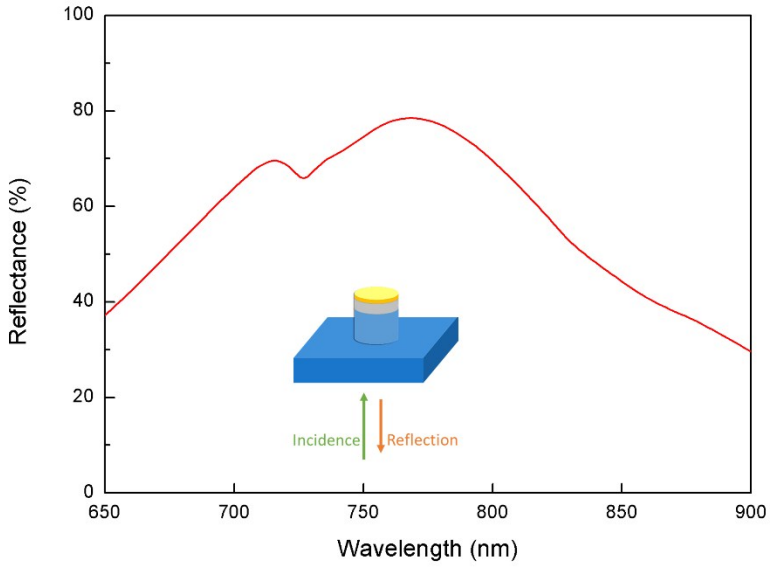

Fig. S2 Simulated reflectance spectrum of the metal nanodisk array supported by the nanopillars. The structure shows a high reflection for wavelengths of 750– 850 nm.

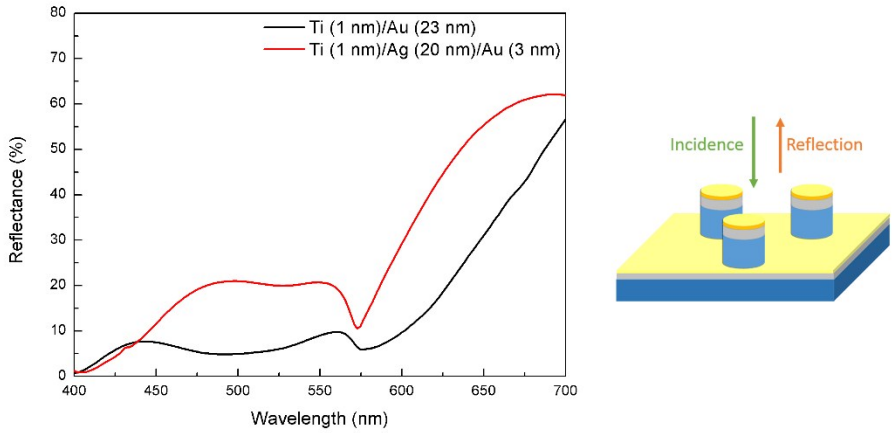

Fig. S3 Simulated reflectance spectra of PNPA structures with Ti (1 nm)/Au (23 nm) and Ti (1 nm)/Ag (20 nm)/Au (3 nm) layers. The PNPA with the Ag layer exhibited a higher reflectance and a distinct spectrum within the visible range; this resulted in better visual perception.

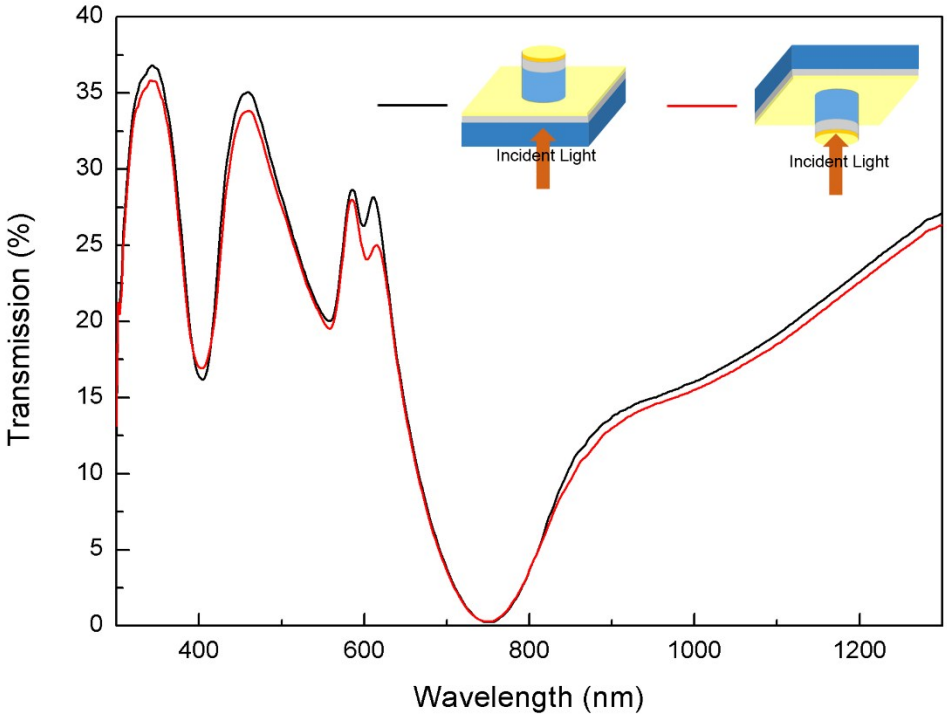

Fig. S4 Experimentally determined transmissions of the PNPA with the light incident from both sides. No noticeable difference was observed in the transmissions.

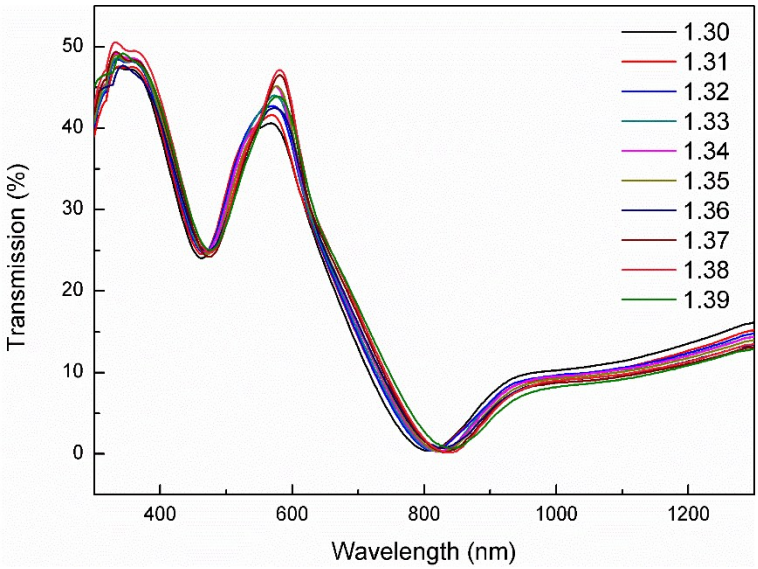

Fig. S5 Experimentally determined transmissions of the PNPA for liquids with refractive indices of 1.30– 1.39 in steps of 0.01 RIU.

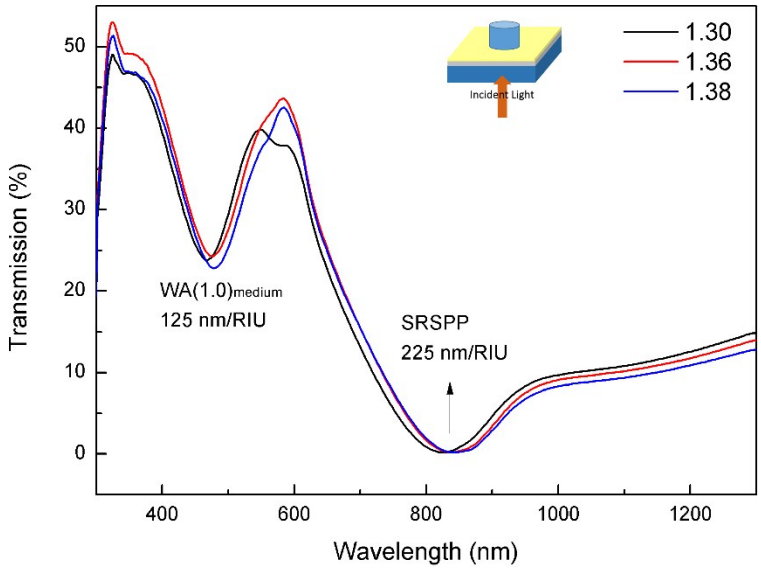

Fig. S6 Experimentally determined transmission spectra of the PNPA without nanodisks for liquids with refractive indices of 1.3, 1.36, and 1.39. In the case of the structure composed of a resist nanopillar array and a perforated metal film, the sensitivity of $WA(1.0)_{medium}$ and SRSPP was only 125 and 225 nm/RIU, respectively. The sample was realized by removing the top metal layer with adhesive tape.