

Electronic supplementary information

High-Sensitivity Long-Range Surface Plasmon Resonance Sensing Assisted by Gold Nanoring Cavity Array and Nanocavity Coupling

Xiaojun Luo, Rui Tan, Qiuju Li, Jiaxin Chen, Yalin Xie, Jiayi Peng, Mei Zeng, Minghang Jiang*,
Caijun Wu*, Yi He*.

School of Science, Xihua University, Chengdu 610039, P. R. China

Figures

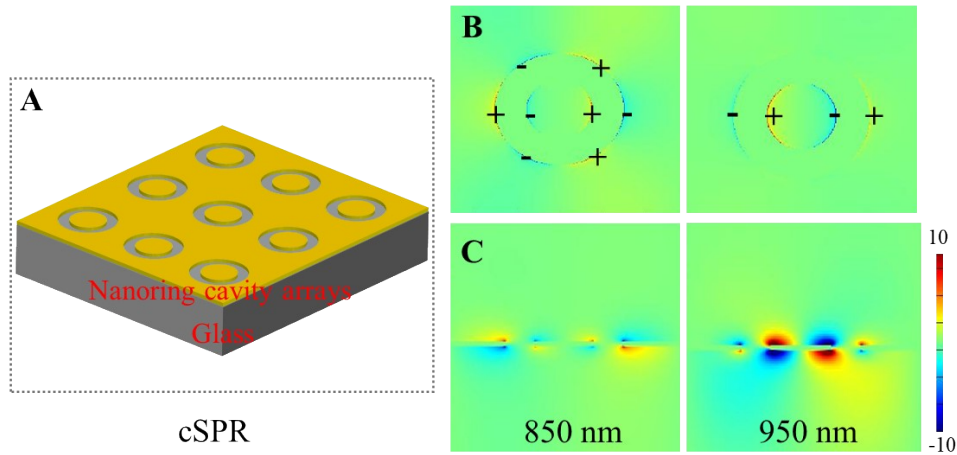


Fig. S1 (A) 3D illustrations of conventional SPR (cSPR) substrate. (B) Charge distributions and (C) z component of the E -field (E_z -field) distributions of cSPR substrate at different resonance modes. The yellow and blue colors in B represent the positive and negative charges, respectively. The color bar in C represents (E_z/E_0) .

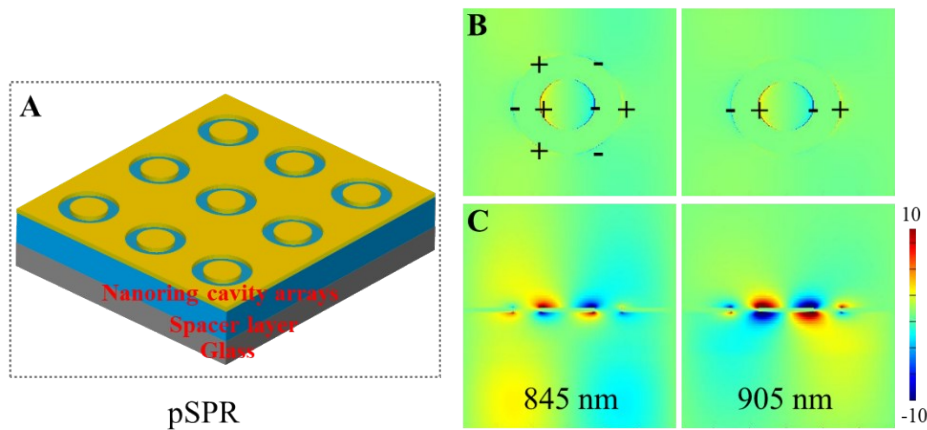


Fig. S2 (A) 3D illustrations of pseudo SPR (pSPR) substrate. (B) Charge distributions and (C) E_z -field distributions of pSPR substrate at different resonance modes. The yellow and blue colors in B represent the positive and negative charges, respectively. The color bar in C represents (E_z/E_0) .

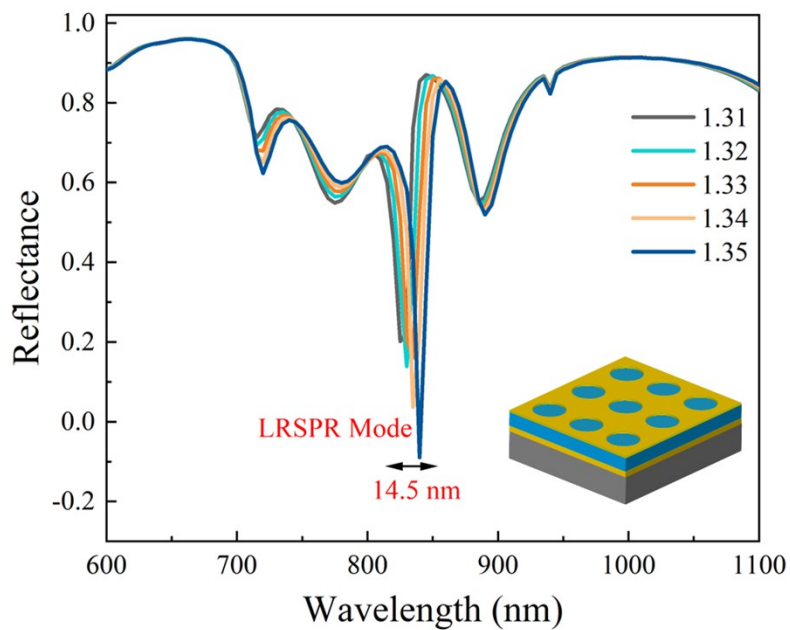


Fig. S3 Reflectance spectra in a surrounding medium of RI varying from 1.31 to 1.35 of nanohole array-LRSPR substrate.

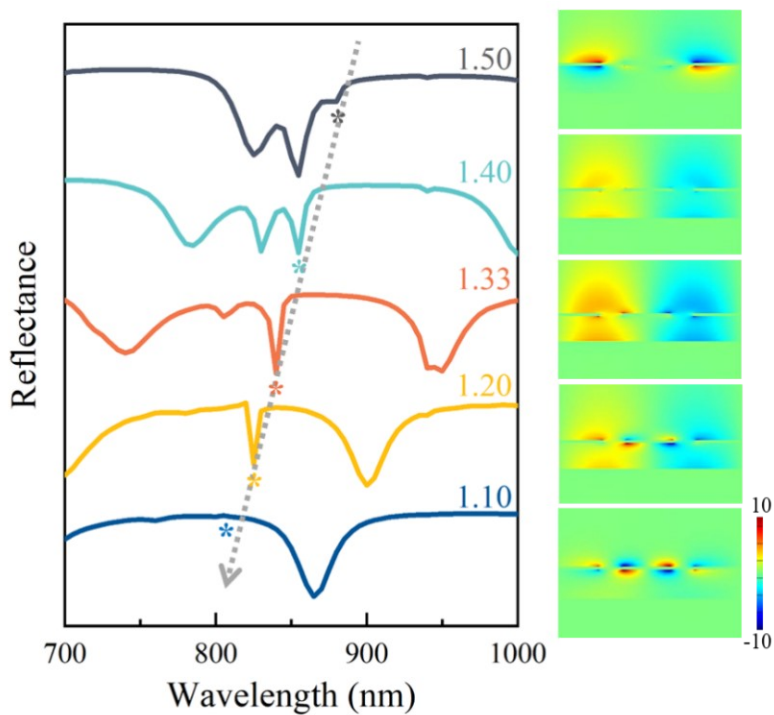


Fig. S4 Reflectance spectra calculated of LRSPR substrate with different refractive indices of space layer and their corresponding E_z -field distributions at LRSPR Mode (marked with *).

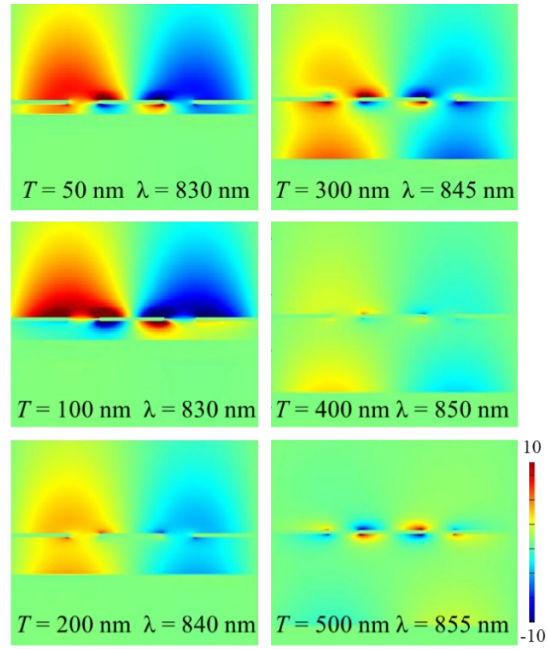


Fig. S5 E_z -field distributions at LRSPR Mode of LRSPR substrate with increasing T from 50 to 500 nm.

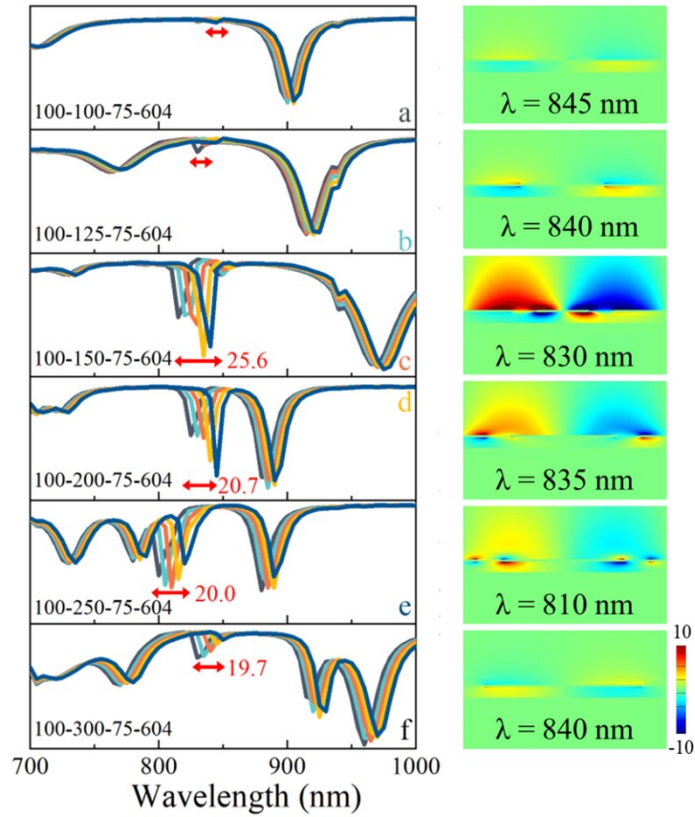


Fig. S6 RI-dependent reflectance spectra and their corresponding E_z -field distributions at LRSPR Mode of LRSPR substrate with increasing S from 100 to 300 nm (a–f).

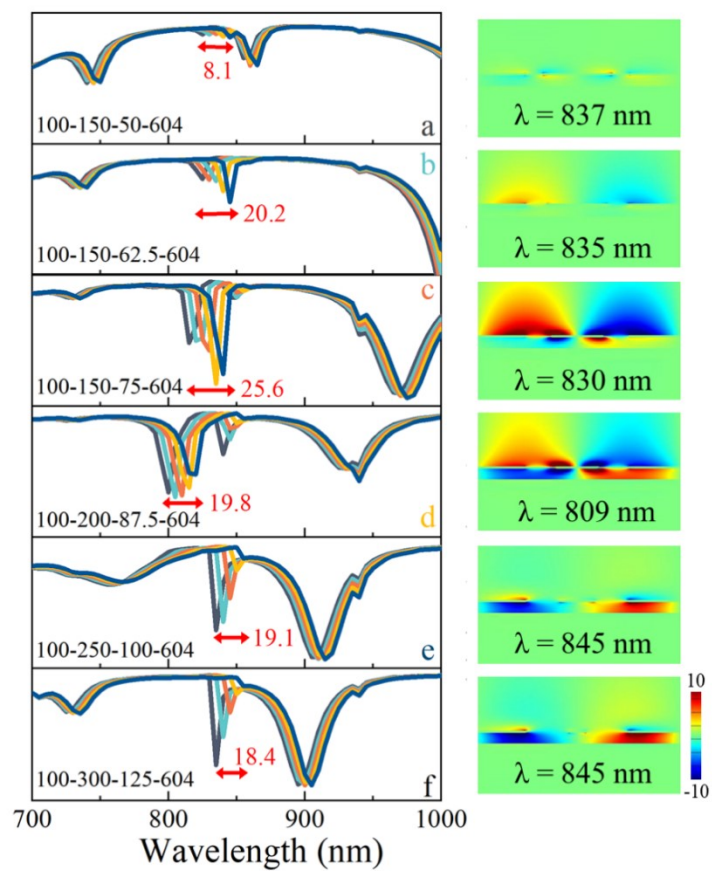


Fig. S7 RI-dependent reflectance spectra and their corresponding E_z -field distributions of LRSPR substrate with increasing G from 50 to 125 nm (a–f).

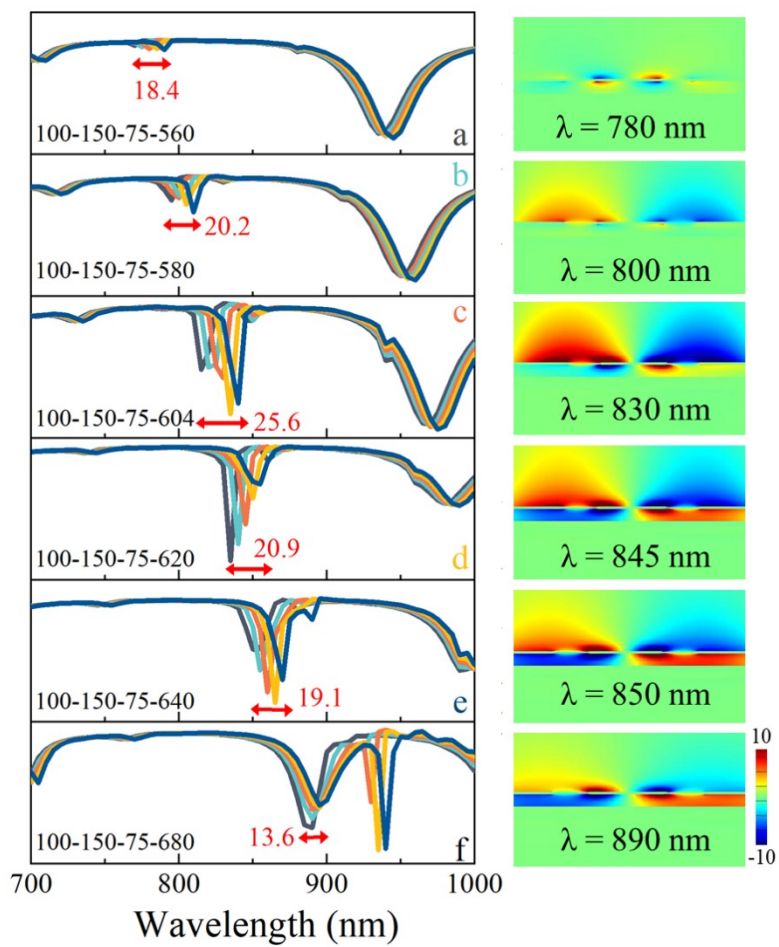


Fig. S8 RI-dependent reflectance spectra and their corresponding E_z -field distributions of LRSPP substrate with increasing P from 560 to 680 nm (a–f).

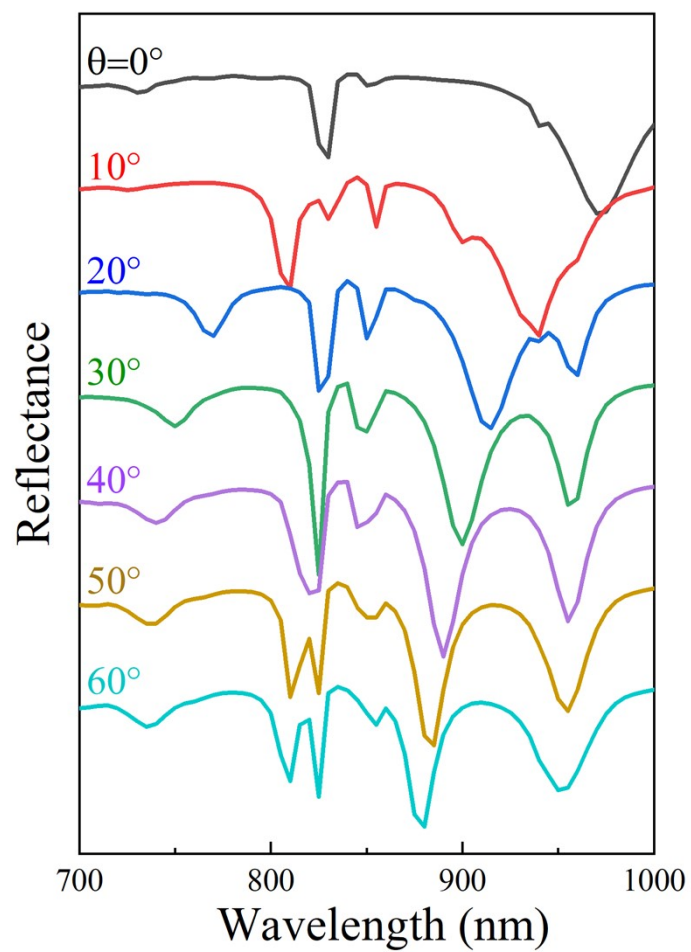


Fig. S9 Reflectance spectra of LRSPR substrate with increasing θ from 0 to 60° .

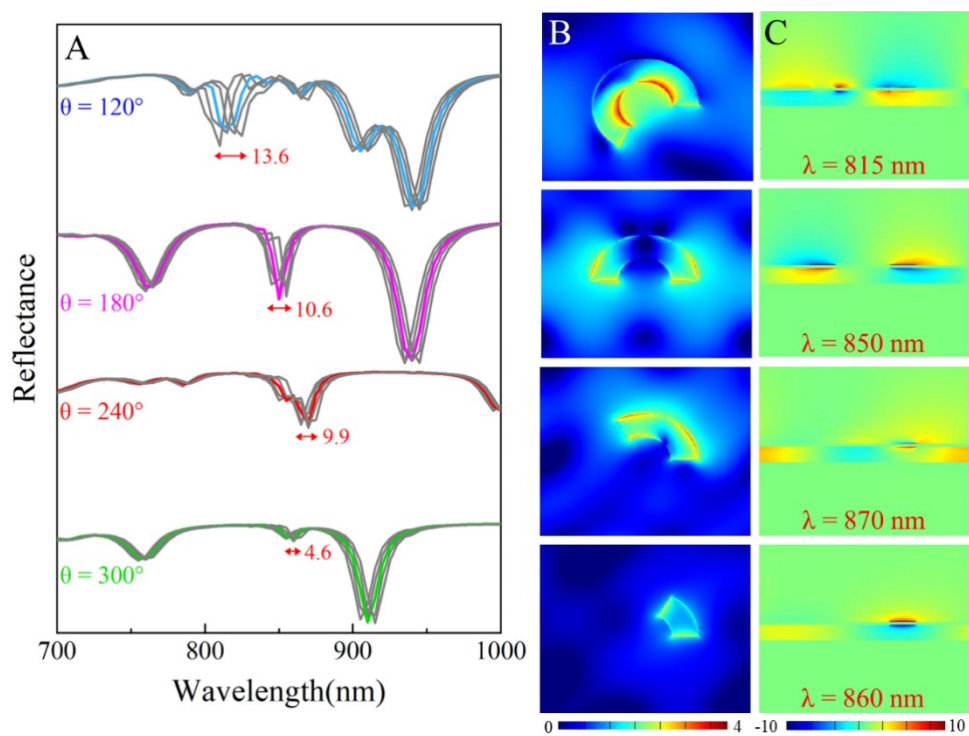


Fig. S10 (A) RI-dependent reflectance spectra of LRSPR substrate with increasing θ from 120 to 300°. (B and C) Corresponding E -field distributions at Au–water interfaces of the top NRCA and E_z -field distributions at the cross-sectional $x-z$ plane of LRSPR substrates at different resonance modes.