

**SUPPLEMENTARY INFORMATION**

**Enhanced detection sensitivity through enzyme-induced precipitate accumulation in LSPR-active nano-valleys**

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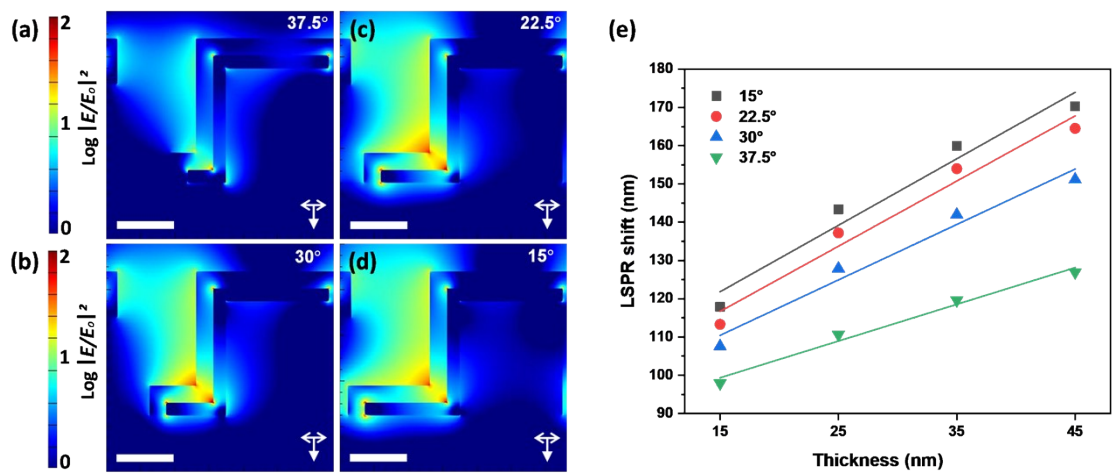
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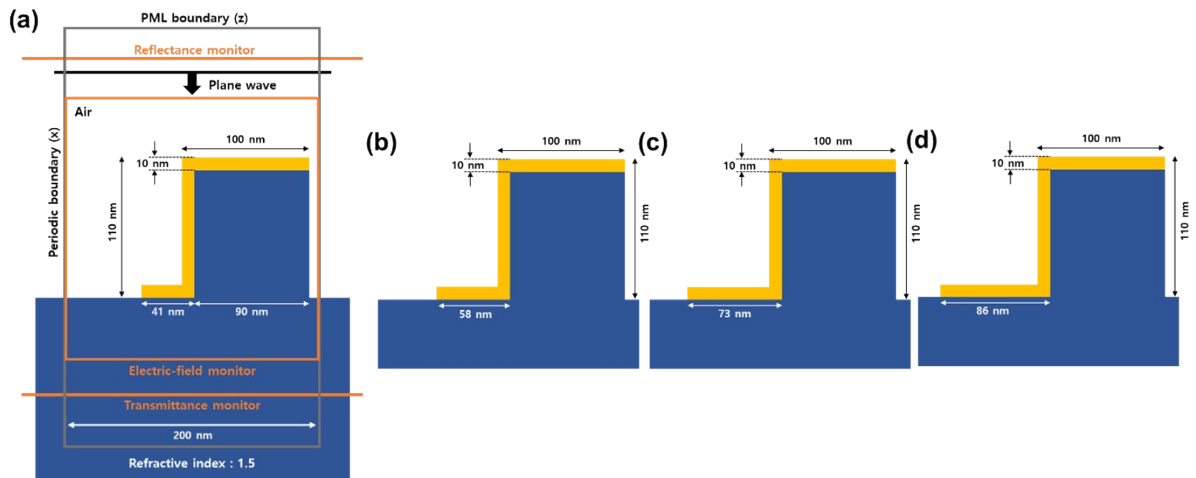
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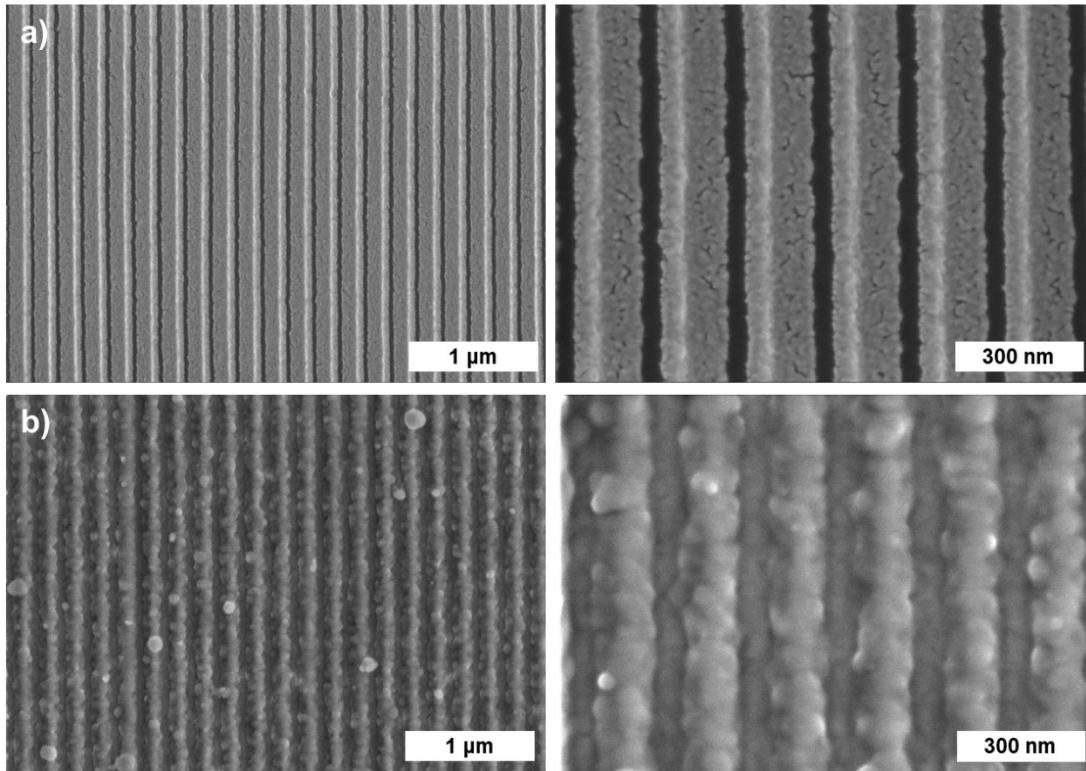
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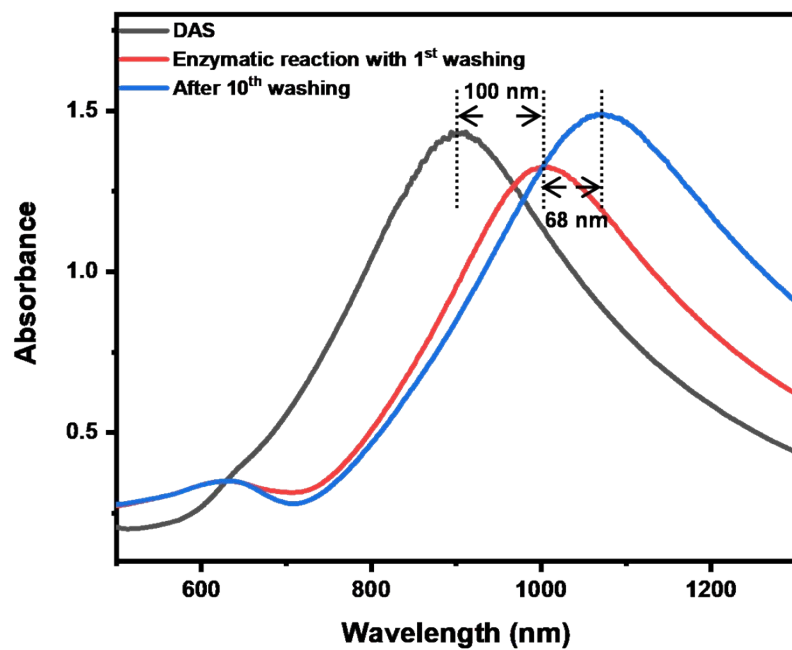
**Fig. S1** (a–d) FDTD simulated electromagnetic field distributions of a DAS fabricated with increasing organic layer thickness from 0 nm to 15 nm at different Au deposition angles and (e) corresponding LSPR sensitivity. Scale bars are 50 nm.



**Fig. S2** (a–d) Schematic illustration of the FDTD simulation geometries for the electromagnetic field distributions of a double-bent Au strip with varying Au-deposited areas from different deposition angles.

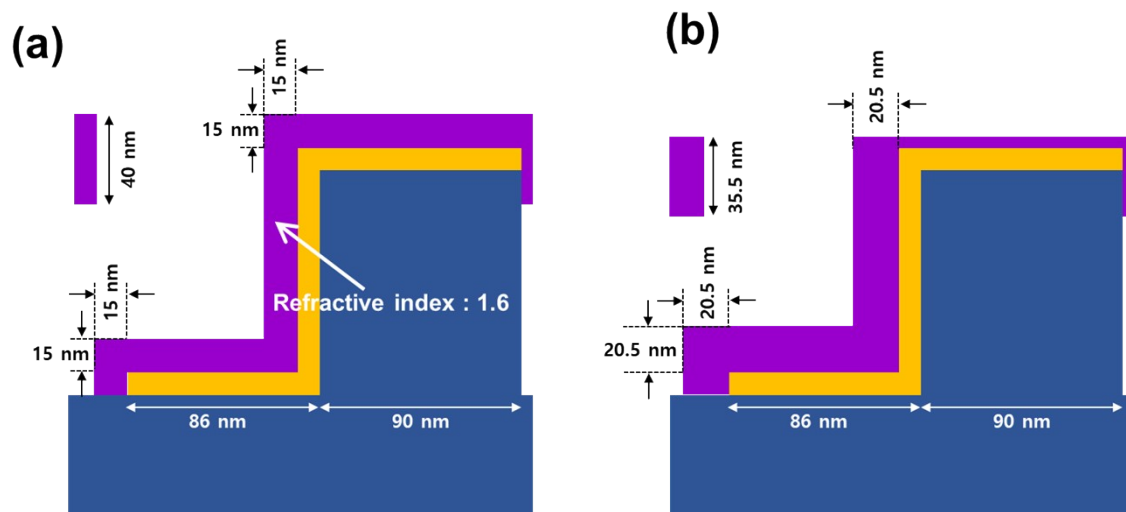


**Figure S3.** (a,b) SEM images in the absence (a) and presence (b) of 100 nM miRNA.

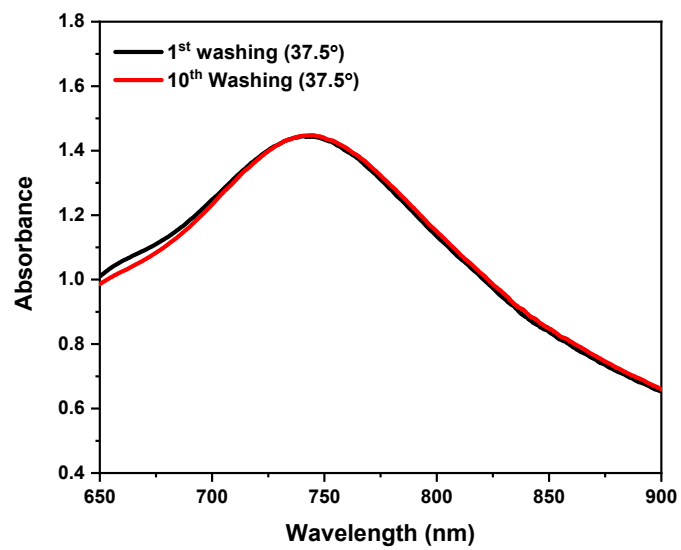


**Fig. S4** LSPR peak shift induced by repeated washing and drying after the treatment of 100 nM miRNA

125b.



**Fig. S5** (a,b) Schematic illustration of the FDTD simulation geometries for the local electric fields around the DAS structures with organic layers.



**Fig. S6** UV-Vis spectra of a DAS fabricated with Au deposition at 37.5° before and after repeated washing and drying.