Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supplementary information:

Thermal deformation of gold nanostructures and its influence on surface plasmon resonance sensing

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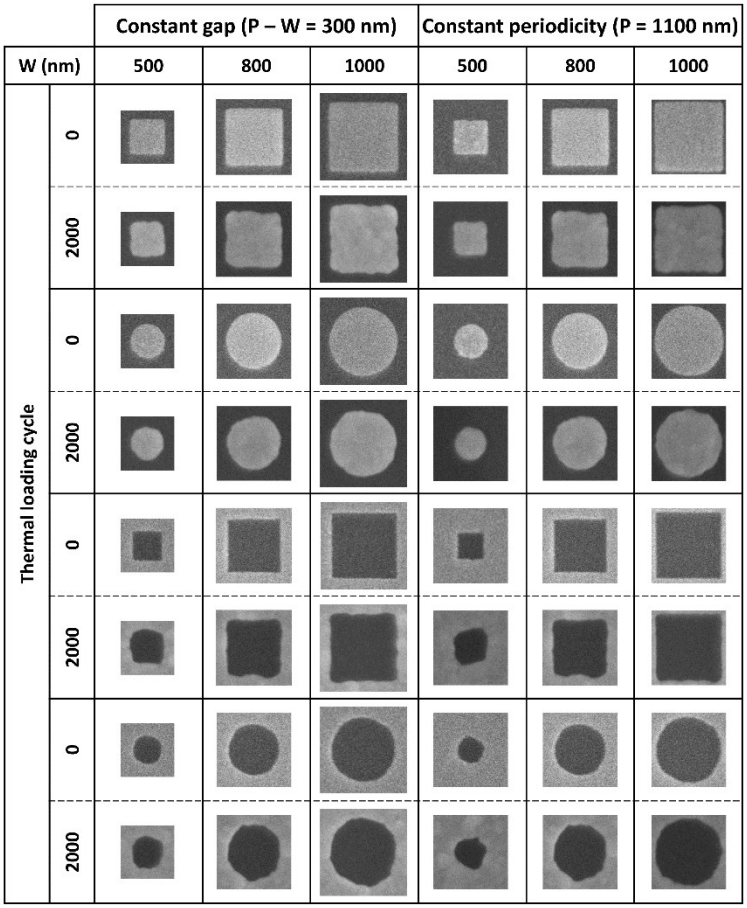

Fig. S1 SEM images of the representative unit cells of all the fabricated Au nanostructures before thermal loading and after 2000 cycles of thermal loading. W and P are the design values.

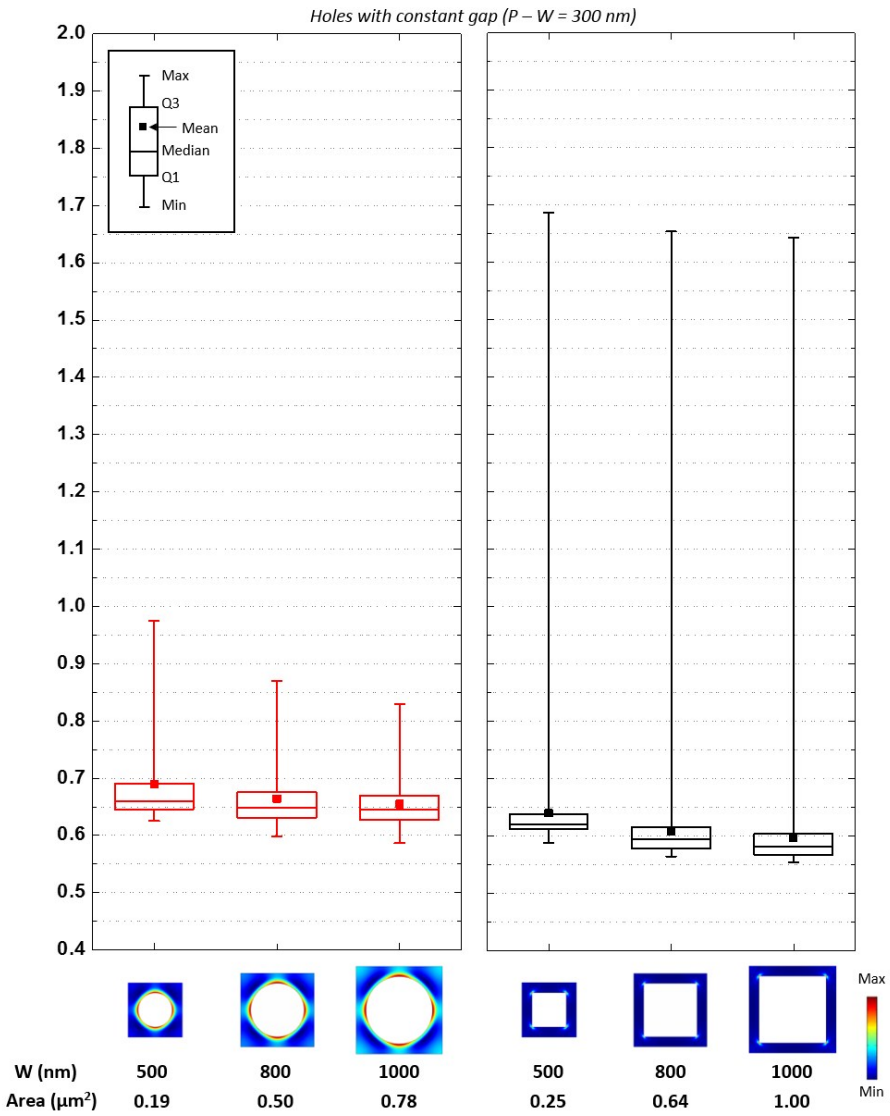

Fig. S2 Simulated thermal stress levels and 2D thermal stress profiles of the unit cell Au nanohole arrays with various shapes and sizes (constant gap of 300 nm). W, P, and Area are design values. Simulation temperature is 500 °C.

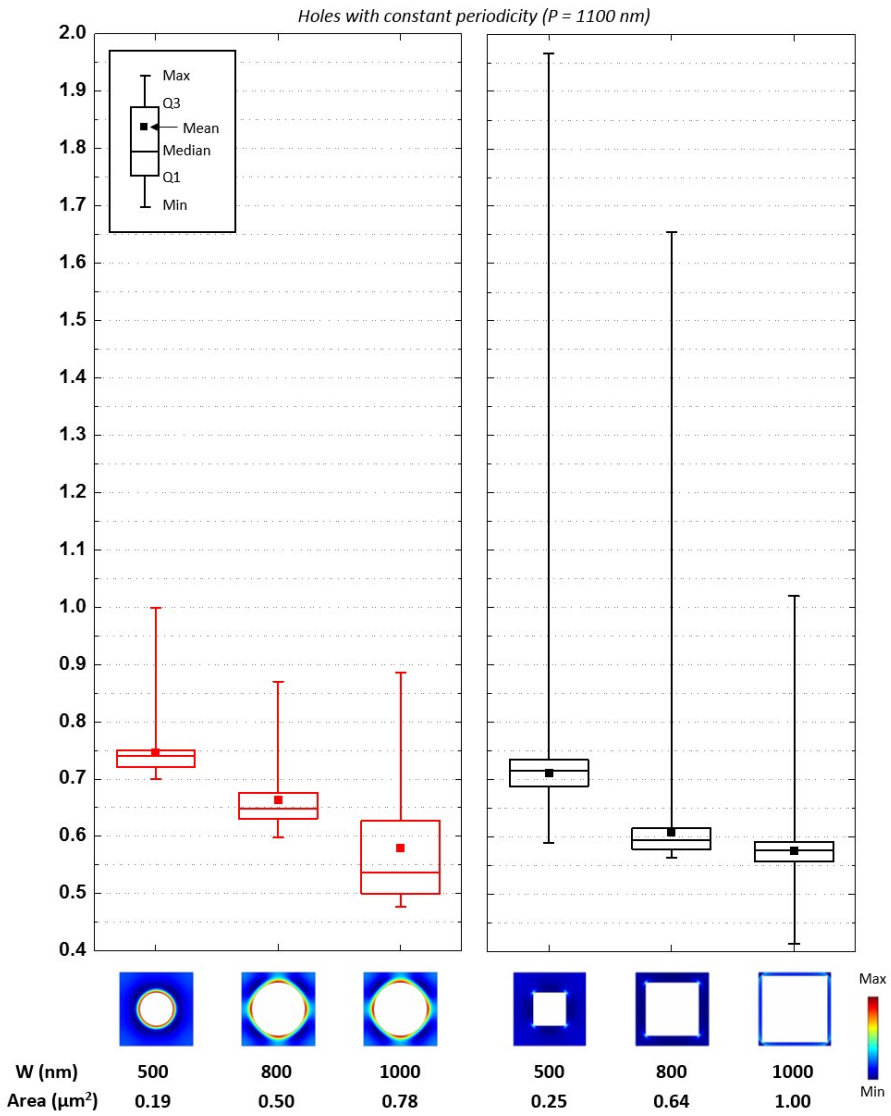

Fig. S3 Simulated thermal stress levels and 2D thermal stress profiles of the unit cell Au nanohole arrays with various shapes and sizes (constant periodicity of 1100 nm). W, P, and Area are design values. Simulation temperature is 500 °C.

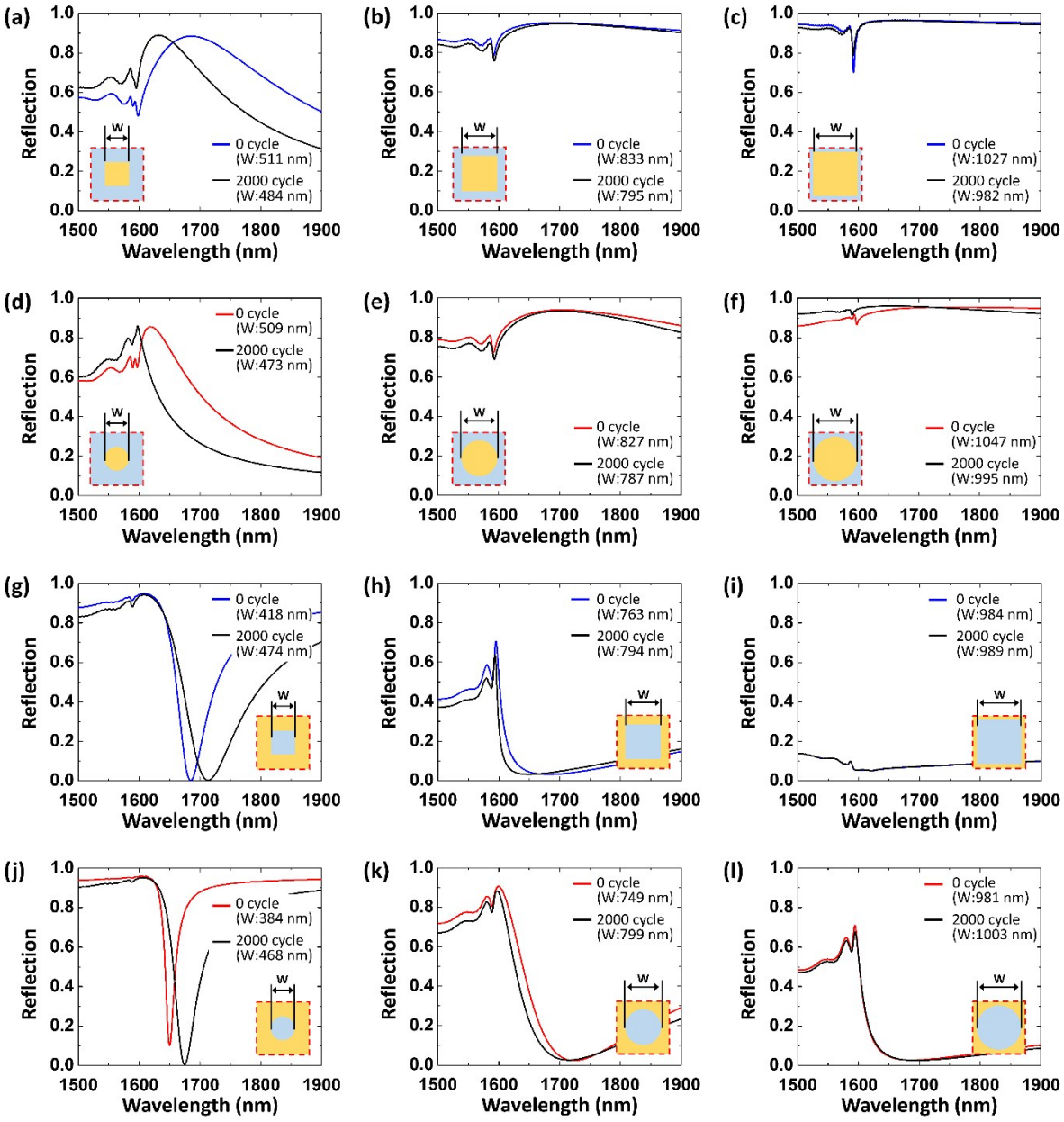

Fig. S4 Simulated reflection spectra of the fabricated Au nanostructures of various shapes and sizes (P = 1100 nm) before thermal loading and after 2000 cycles of thermal loading. (a), (b), and (c) are the square Au nanopatch arrays with designed W of 500 nm, 800 nm, and 1000 nm, respectively. (d), (e), and (f) are the circular Au nanopatch arrays with designed W of 500 nm, 800 nm, and 1000 nm, respectively. (g), (h), and (i) are the square Au nanohole arrays with designed W of 500 nm, 800 nm, and 1000 nm, respectively. (j), (k), and (l) are the circular Au nanohole arrays with designed W of 500 nm, 800 nm, and 1000 nm, respectively. Note that W for the simulation model is an equivalent width calculated from the measured area of the fabricated nanostructures before and after thermal loading.