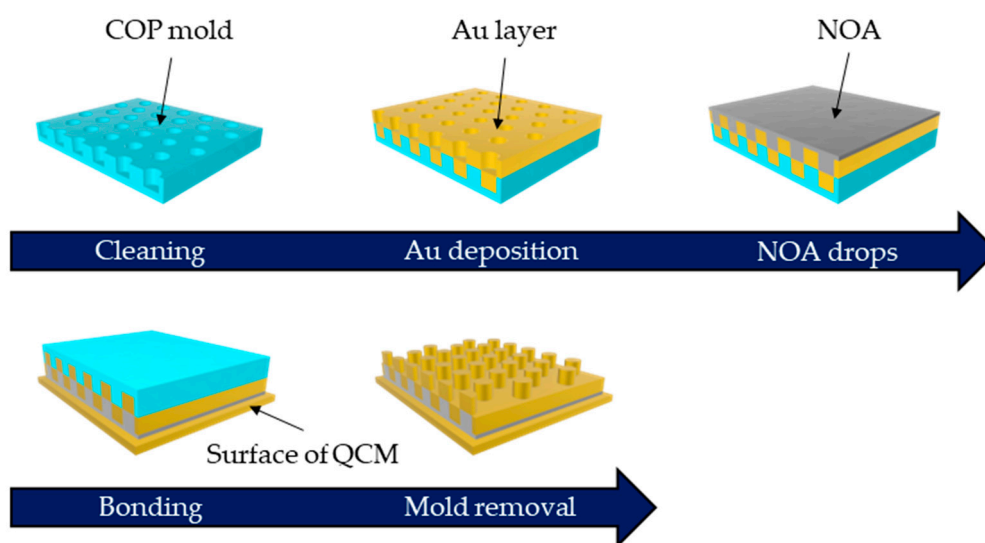
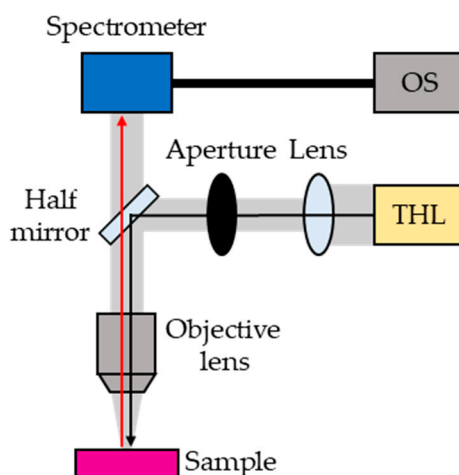


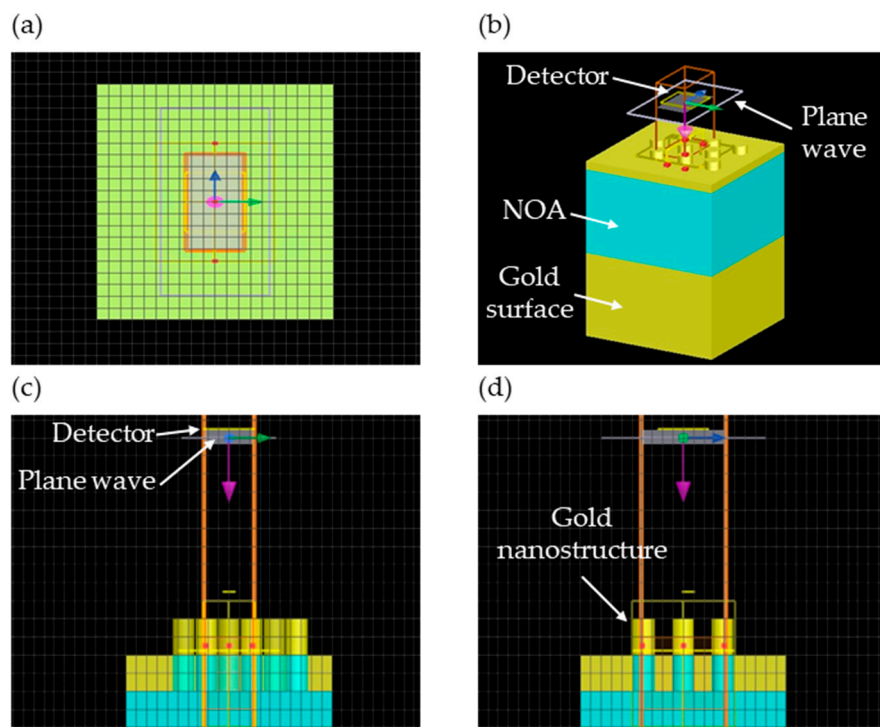
## Fabrication of gold nanostructures on quartz crystal microbalance surface using nanoimprint lithography for sensing applications



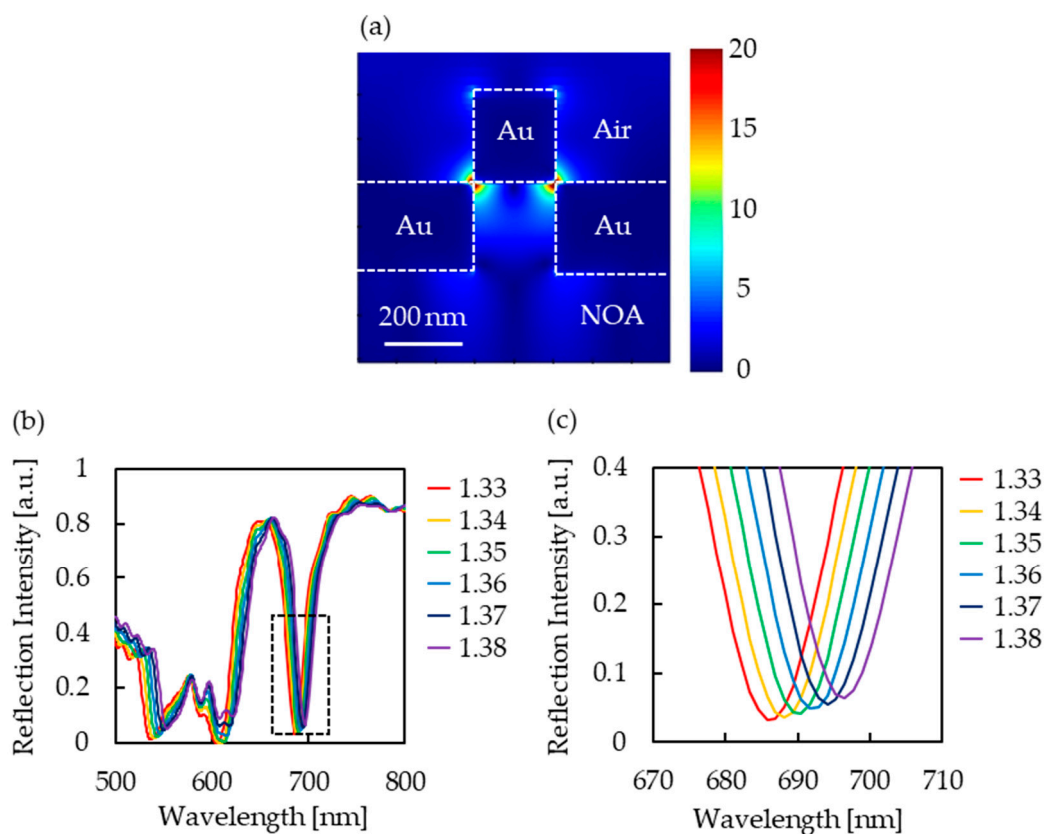
**Figure S1.** Schematic of the gold nanostructure fabrication.



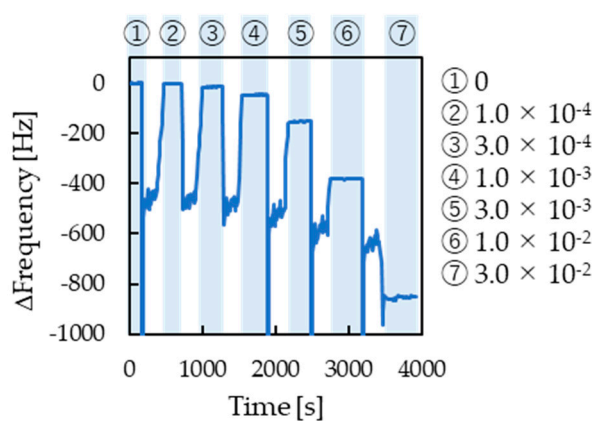
**Figure S2.** Schematic of the homemade optical setup for measuring the reflection spectrum.



**Figure S3.** Details of gold nanostructure simulation model. (a) 3D view. (b) X-Y plane. (c) X-Z plane. (d) Y-Z plane.



**Figure S4.** (a) Electric field distribution at 649 nm. (b) Reflection spectra calculated by simulation in various refractive index environments. (c) Enlarged image of the absorption peak in (b) (dotted squares).



**Figure S5.** Resonance frequency change measured by a QCM device without nanostructure when nanoparticles ( $1.0 \times 10^{-4}$ – $3.0 \times 10^{-2}$ % (w/w)) are adsorbed.