

## Supplementary material

For studying the stability of as-deposited AgNR substrate and Au-modified AgNR substrate in ambient air, we used the O<sub>2</sub> plasma to accelerate the oxidation of Ag. These two kinds of substrates (as-deposited AgNR substrate and Au-modified AgNR substrate ( $t = 20$  min)) were treated by plasma (PDC-32G plasma cleaner, Harrick Plasma, Ithaca, NY) at 0.4 Torr O<sub>2</sub> partial pressure with 10.5 W power for 20 s, respectively. Then they were treated by MPH and measured the SERS spectra under identical conditions mentioned in main text.

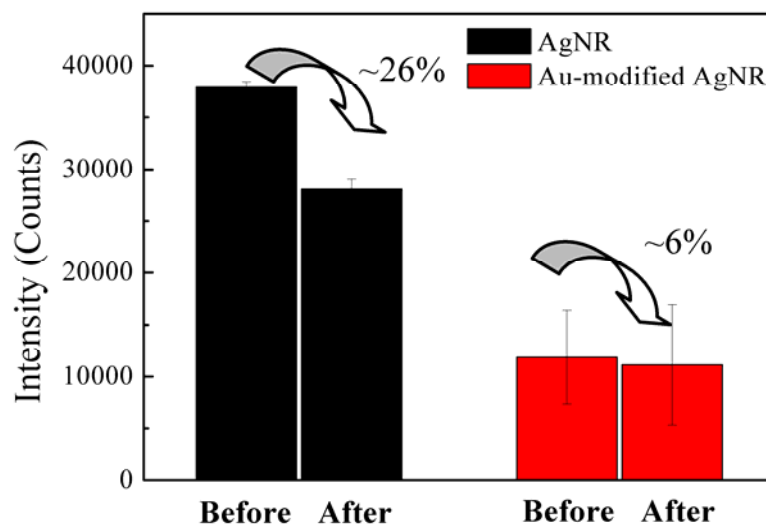


Fig. S1 Comparison of the SERS responses of AgNR substrate and Au-modified AgNR substrate ( $t = 20$  min) before and after plasma treatment, respectively. After plasma treatment, the SERS intensity detected on AgNR substrate decreases ~26%, as a comparison, the signal obtained on the Au-modified AgNR substrate only shows a ~6% decrease.