

Supplementary Files

Magnetic Halloysite Nanotubes based SERS Biosensor Enhanced with Au@Ag Core-Shell Nanotags for Bisphenol A Determination

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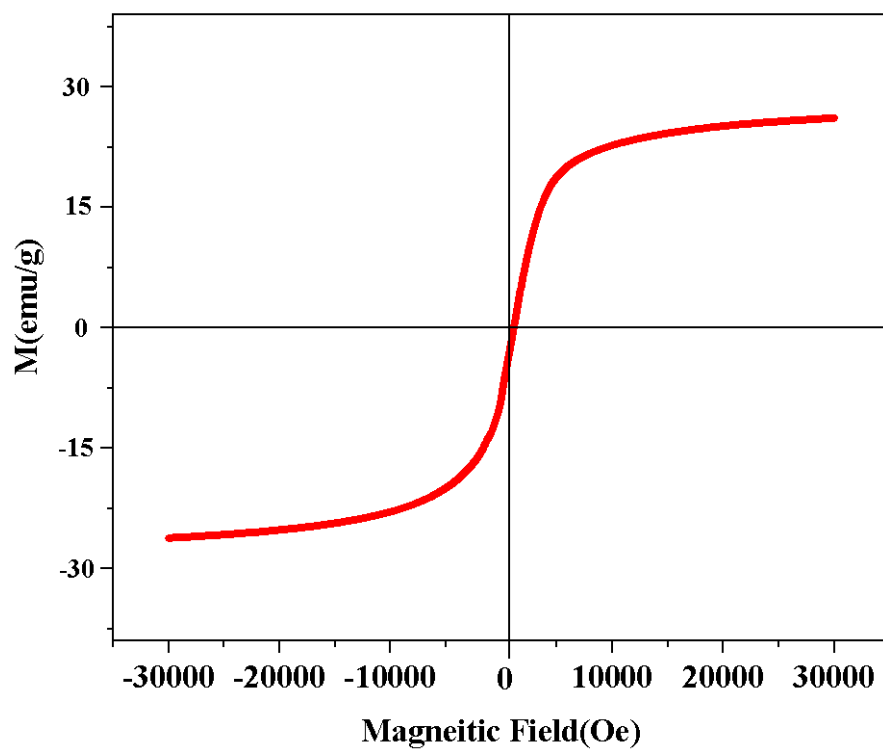


Figure S1. Hysteresis curves for MNTs@AuNPs.

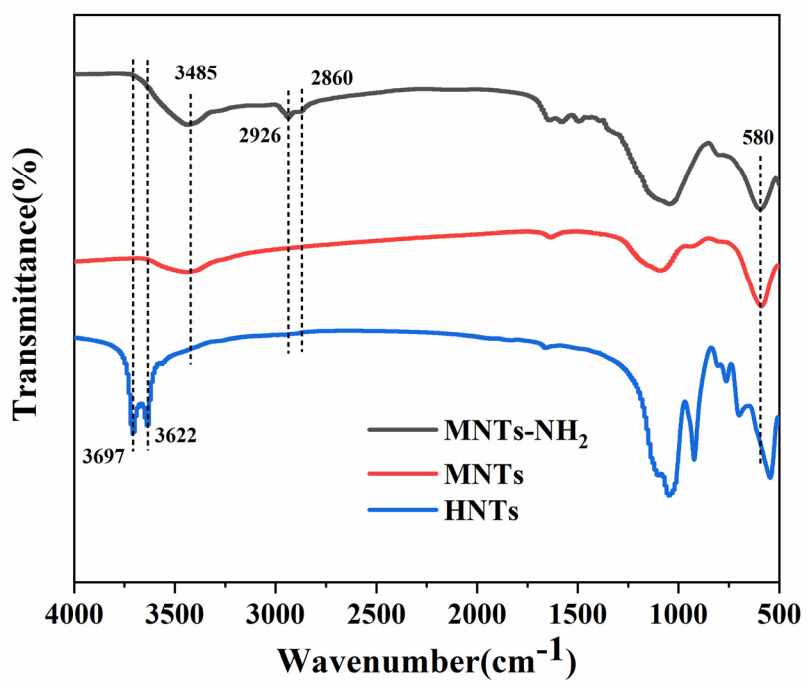


Figure S2. FTIR spectra of HNTs, MNTs and MNTs- NH_2 .

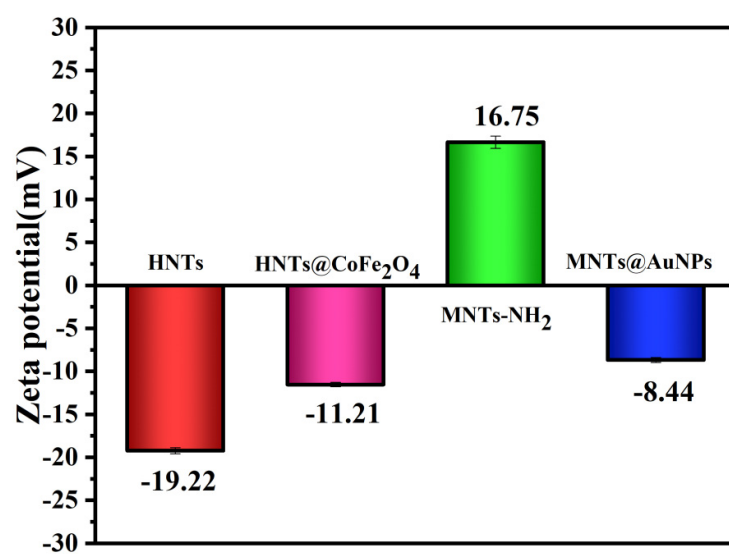


Figure S3. Zeta potential of HNTs, MNTs and MNTs-NH₂ and MNTs@AuNPs.

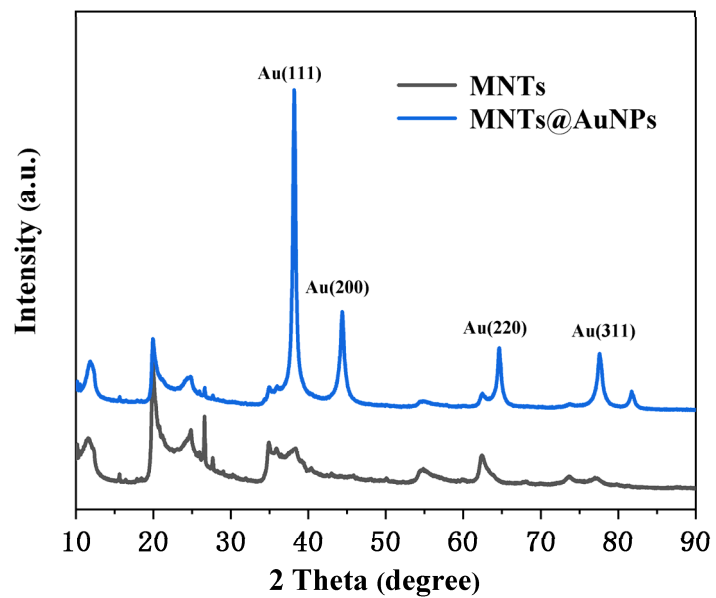
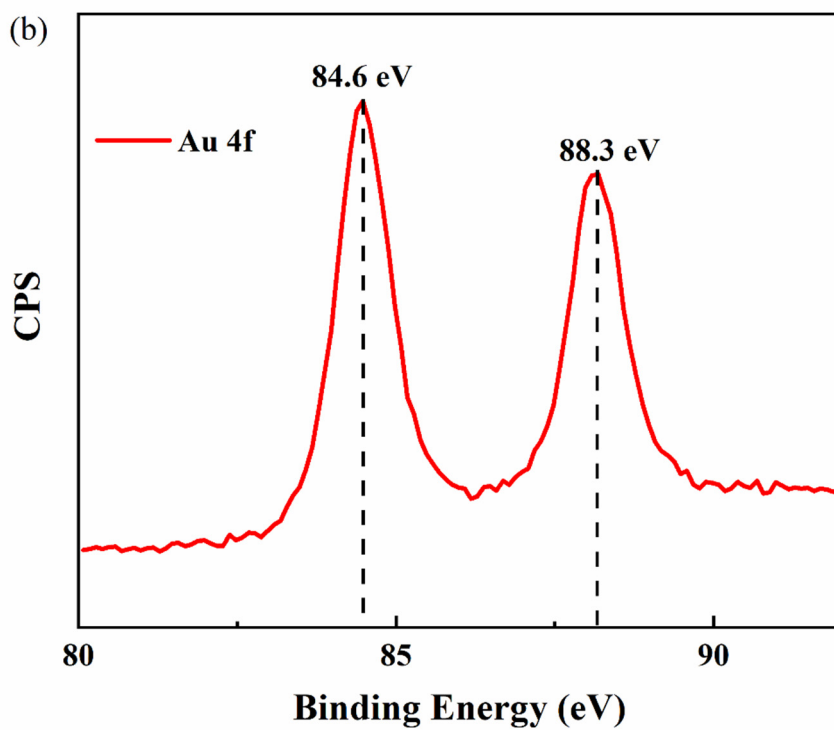
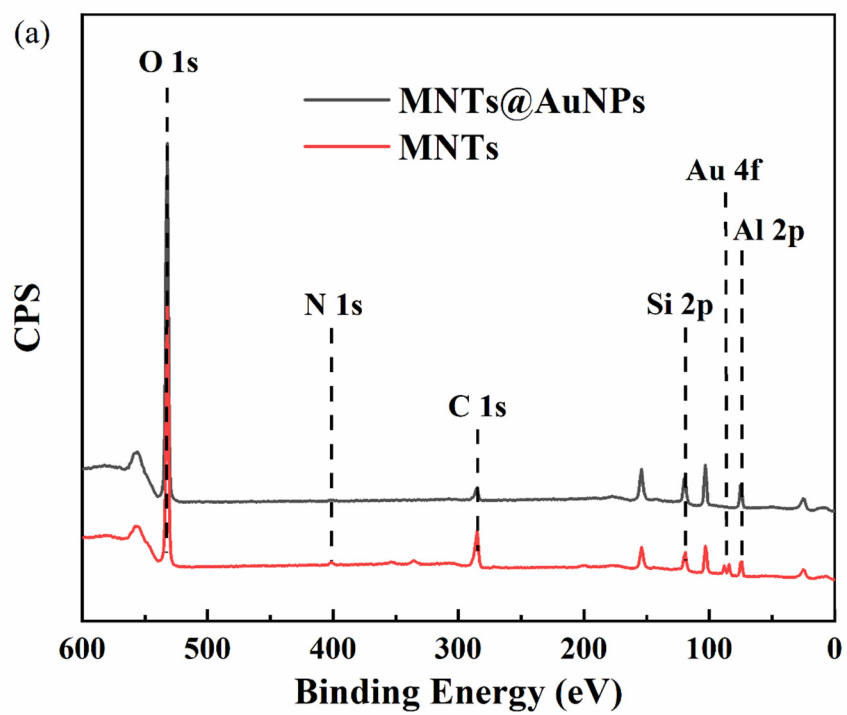
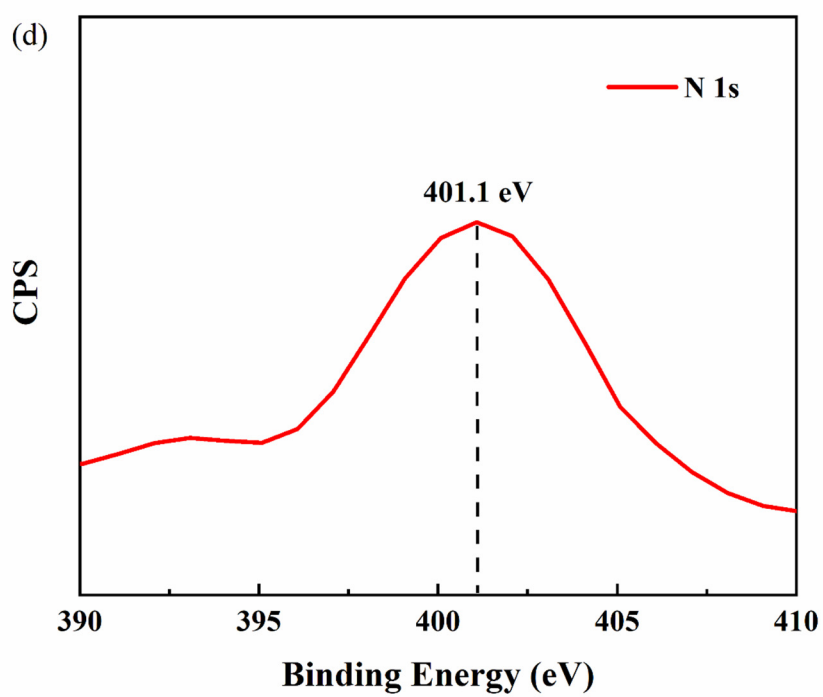
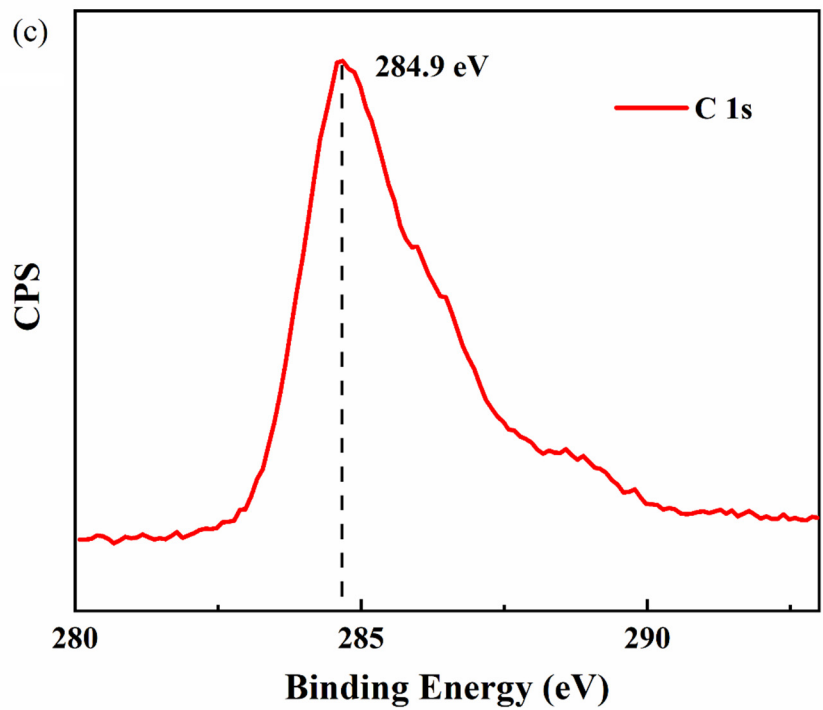
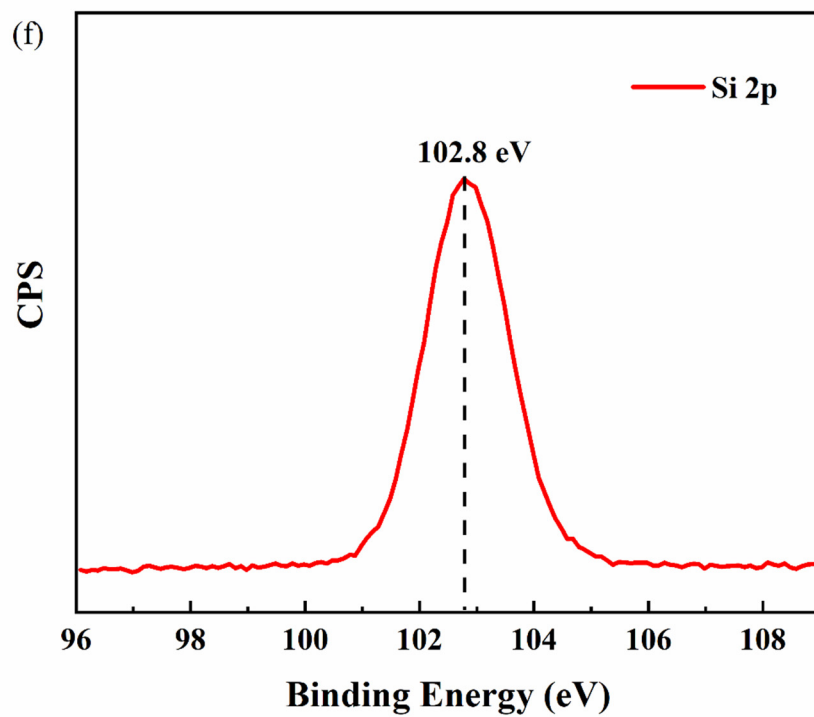
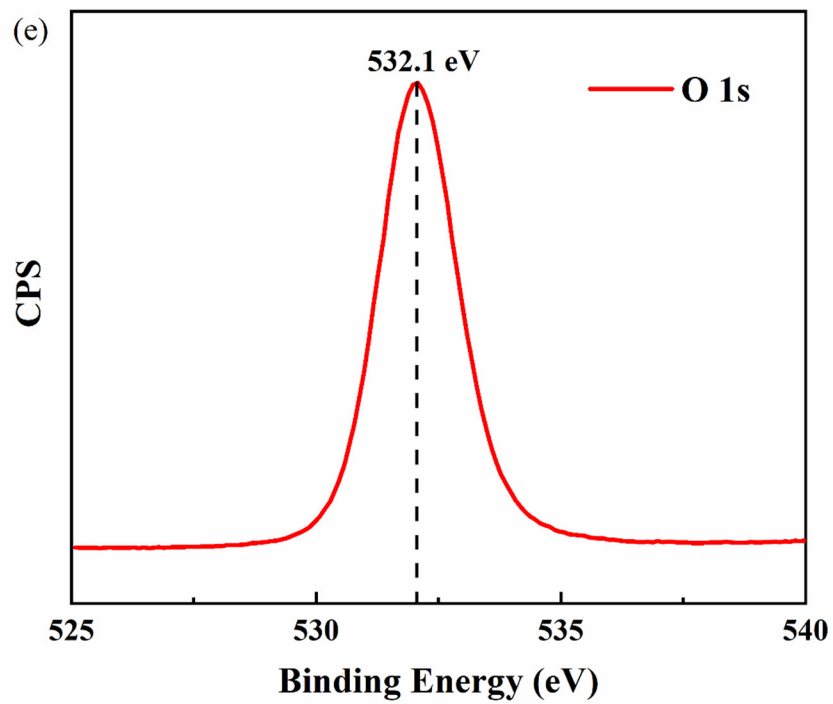


Figure S4. X-ray diffraction patterns of MNTs and MNTs@AuNPs.







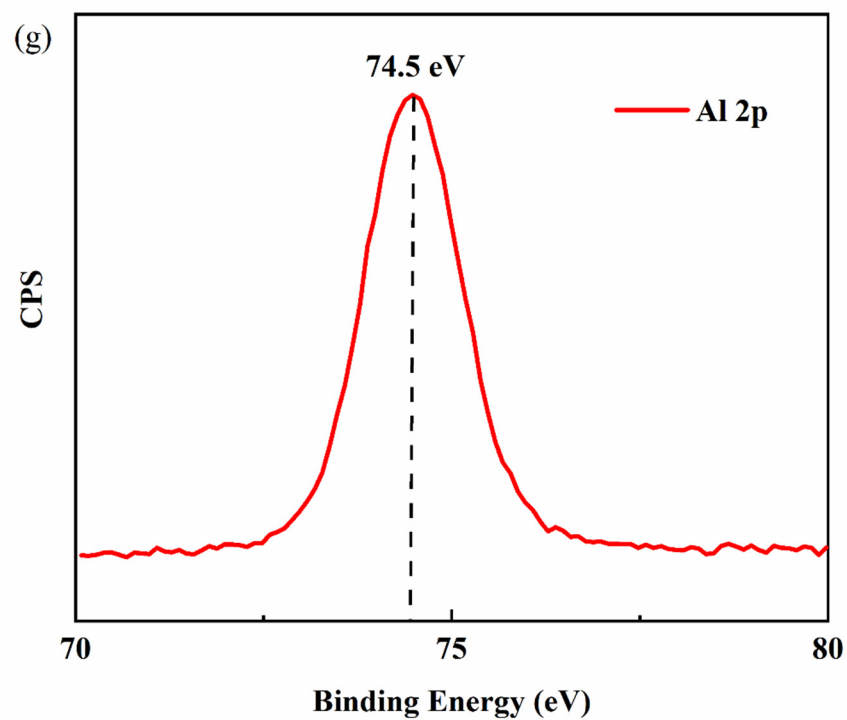


Figure S5. (a) X-ray photoelectron spectra of MNTs and MNTs@AuNPs. (b-g) XPS scan curves for the Au, C, N, O, Si, and Al elements in MNTs@AuNPs.

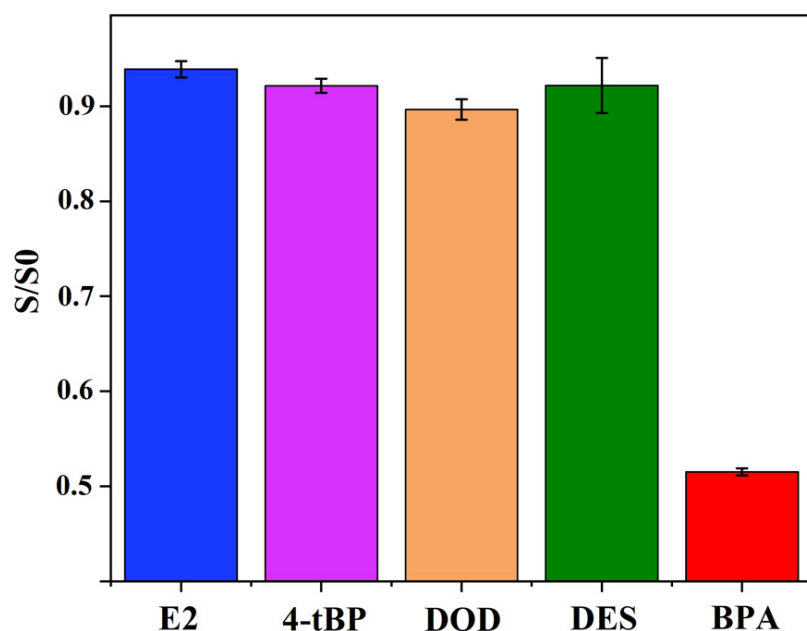


Figure S6. Comparison of Raman peak intensities at 1077 cm^{-1} for estradiol (E2), 4-tert-butylpyridine (4-tBP), 4,4'-dihydroxybiphenyl (DOD), hexenestrol (DES), and bisphenol A (BPA) by the reporter probes. The SERS intensities of the experimental group (S) and the control group (S0) were detected. Error bars indicate the standard deviation of the three replicate experiments.