Supplementary Material

Core-shell structured AuNPs@ZnCo-MOFs SERS substrate for sensitive and selective detection of thiram

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1. The calculation the EF of AuNPs@ZnCo MOFs substrate

Enhancement factor (EF) is a significant index used for evaluating the Raman sensitivity of a SERS substrate. Here, the SERS EF value of AuNPs@ZnCo MOFs substrate was calculated by utilizing the formulas based on the previous method reported. The specific equation is listed as follows:

$$EF = \left(\frac{I_{SERS}}{I_{NR}}\right)\left(\frac{C_{NR}}{C_{SERS}}\right)$$

$$EF = \left(\frac{5213.86}{148.632}\right) \times \left(\frac{0.1\ M}{1 \times 10^{-6}\ M}\right) = 3.51 \times 10^{6}$$

Where I_{SERS} represents the SERS intensity of 4-ATP on the AuNPs@ZnCo MOFs substrate, I_{NR} represents the control Raman intensity of 4-ATP. And C_{SERS} (1.0×10^{-6} mol·L^{-1}) and C_{NR} (0.1 mol·L^{-1}) are the corresponding concentrations of 4-ATP used for SERS and control Raman tests, respectively. Finally, the EF value of AuNPs@ZnCo MOFs substrate calculated is about 3.51×10^{6}. These results confirm that our prepared AuNPs@ZnCo MOFs SERS substrate has acceptable SERS activity.