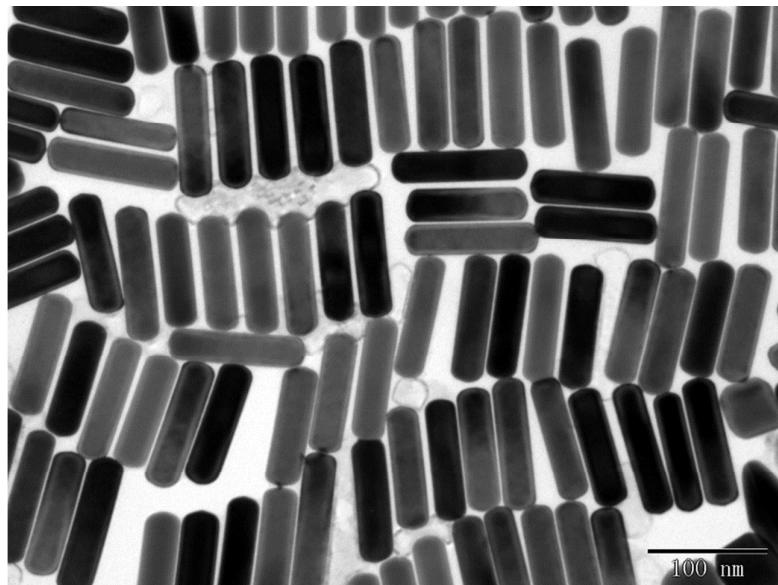


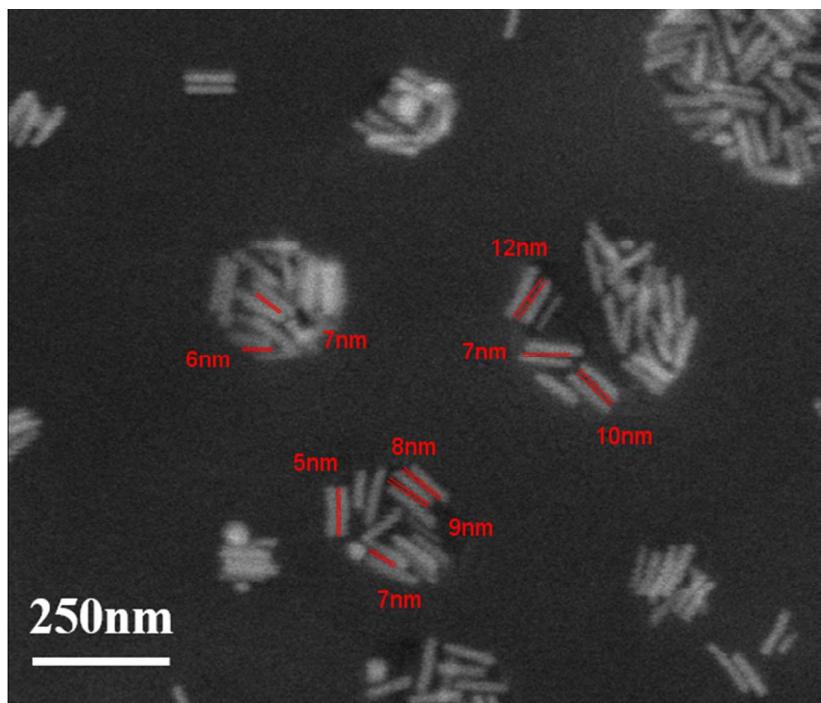
# Fabrication of flexible gold nanorods polymer metafilm via phase transfer method as SERS substrate for detecting food contaminants

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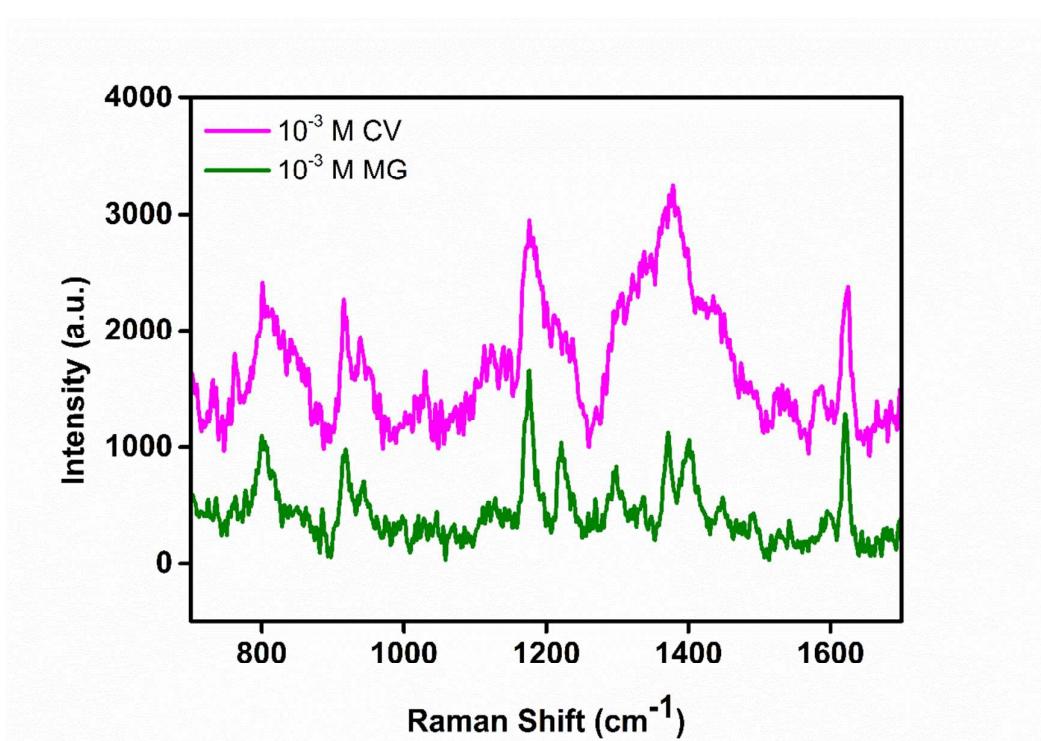
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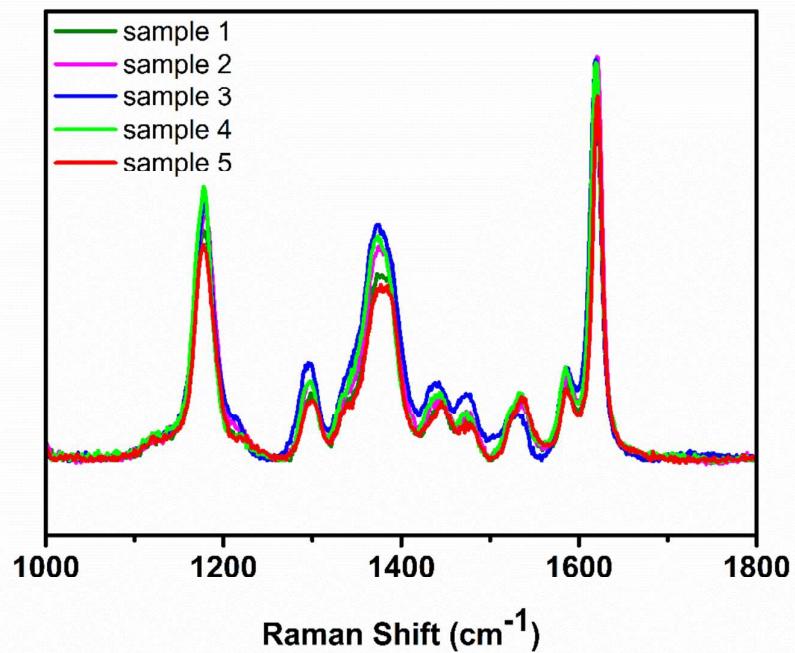
SI Figure 1. Representative TEM images of AuNRs , the ratio is 3.8 (105.34±5.16/27.52±1.44).



**SI Figure 2.** The high-magnification SEM image of metafilm fabrication with  $400\mu\text{L}$  AuNRs-DCM solution, the mark is the gaps between goldnanorods.

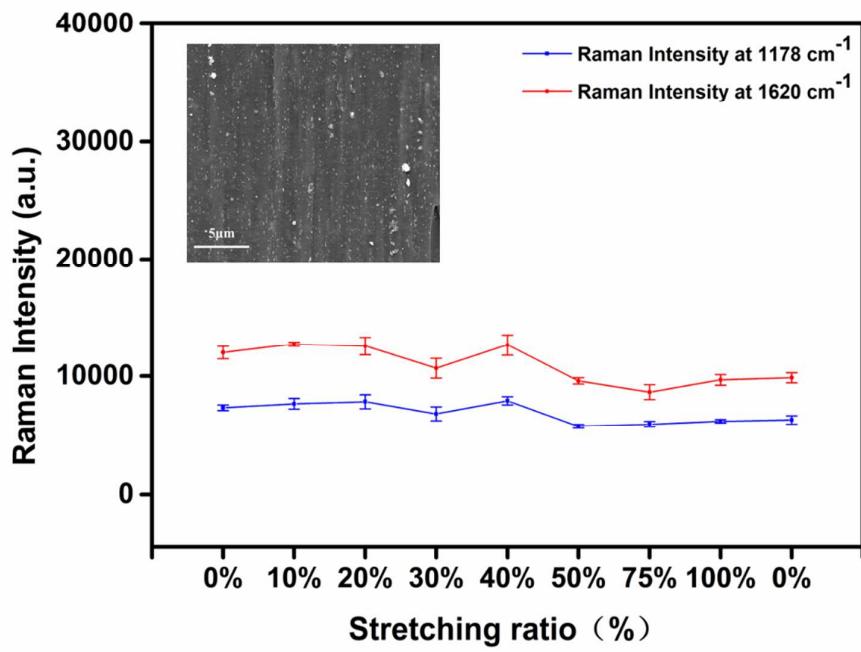


**SI Figure3.** SERS spectrum of 10<sup>-3</sup> M CV (pink line) and 10<sup>-3</sup> M MG (green line).

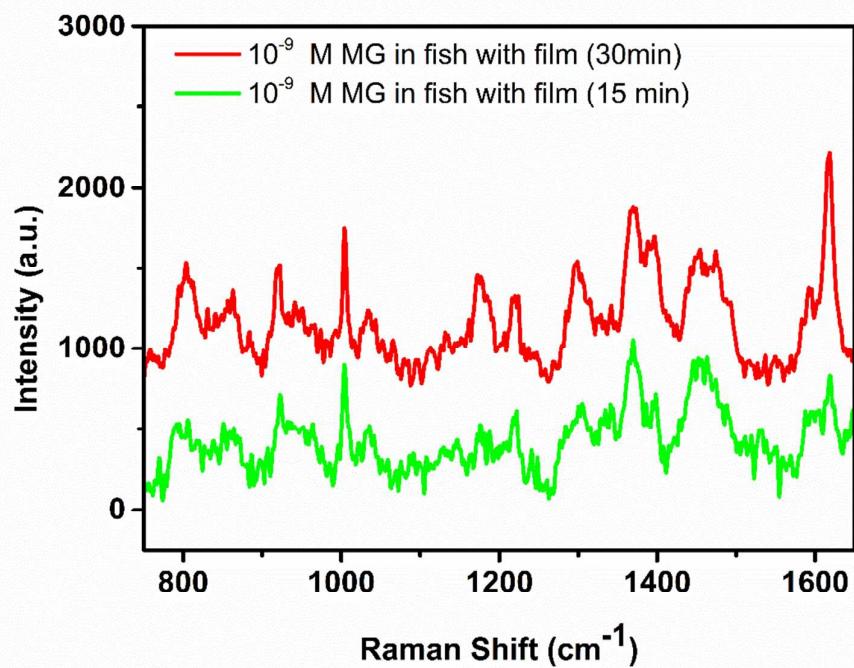


**SI Figure 4.** SERS spectra collected from five metafilm substrates samples that have been soaked

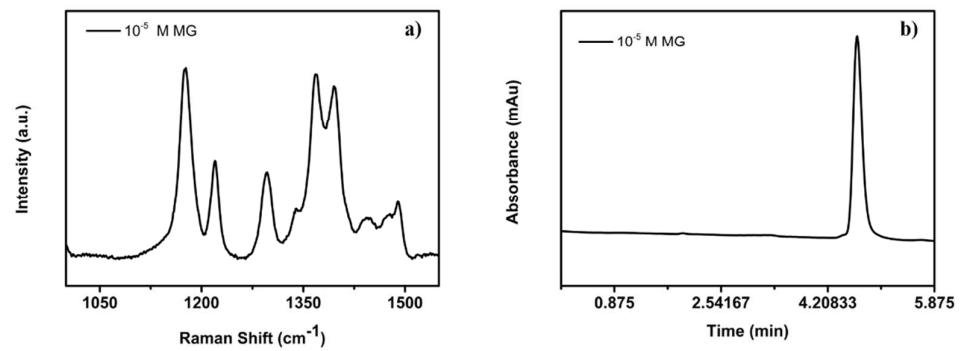
in  $10^{-7}$  M CV for 4 hours.



**SI Figure 5.** Corresponding Raman intensity change of flexible metafilm under different stretching ratio, using  $10^{-7}\text{ M}$  CV as probe, laser wavelength is 633 nm and integration time is 1 s. The inset is SEM image of metafilm after stretching.



**SI Figure 6.** SERS spectrum collected from fish surface with  $10^{-9}$  M MG in different immersion time. Laser wavelength is 633 nm and integration time is 15 s.



**SI Figure 7.** Spectrum of  $10^{-5}$  M MG detected by SERS (a) and high performance liquid chromatography (HPLC) (b).

**Table S1.** Food contaminants residues detected by SERS

	CV	MG	thiram
This method	$1 \times 10^{-9}$ M	$1 \times 10^{-10}$ M	$1 \times 10^{-6}$ M
ref	1ppb (1)	1ppb (1)	$5 \times 10^{-6}$ M (6)
	$1 \times 10^{-7}$ M (2)	$1 \times 10^{-7}$ M (4)	240 ng/cm <sup>2</sup> (7)
	$1 \times 10^{-7}$ M (3)	0.0001 mg/L (5)	38 ng/cm <sup>2</sup> (8)

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