Supporting Information

High Performance and Recyclable Ag/ZnO/PM substrate for the detection of organic pollutants

Yixin Shao[a], Hongxin Cai[a,*], Lingling Yan[a,*], Hang Yu[a], Qiang Hu[a], Liang Chen[a], Haitao Zong[a], Xiufang Hou[a]

[a]*School of Physics and Electronic Information Engineering, Henan Polytechnic University, Jiaozuo, 454000, China*

---

*Corresponding author.
  E-mail addresses: me2001@hpu.edu.cn (H. X. Cai).
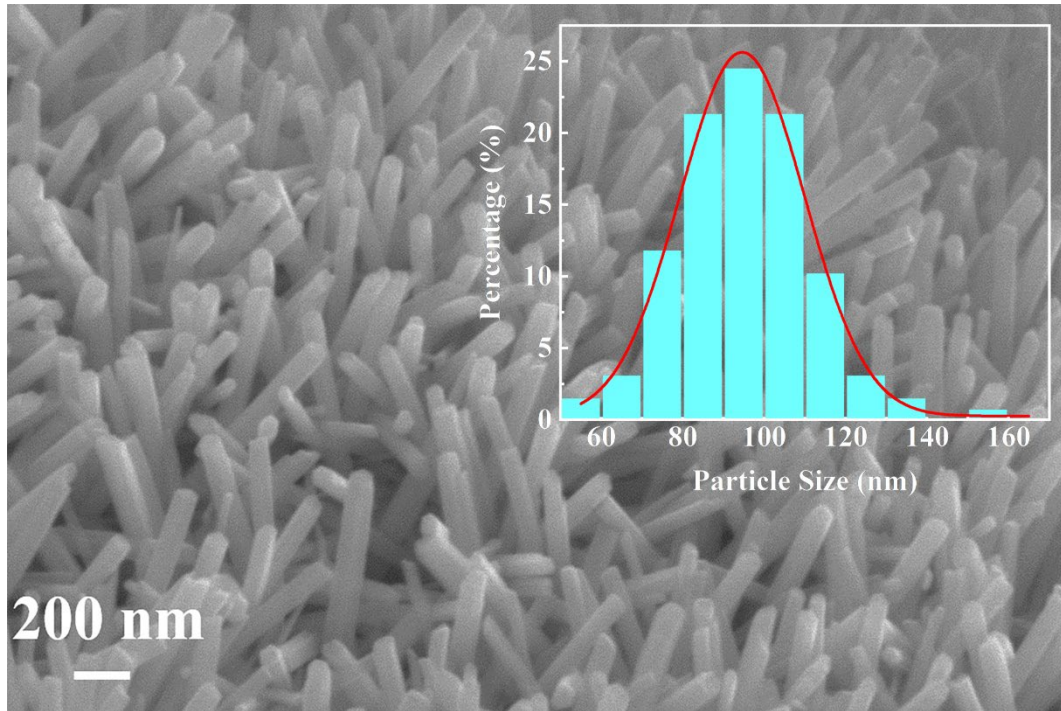 E-mail addresses: yll@hpu.edu.cn (L. L. Yan).
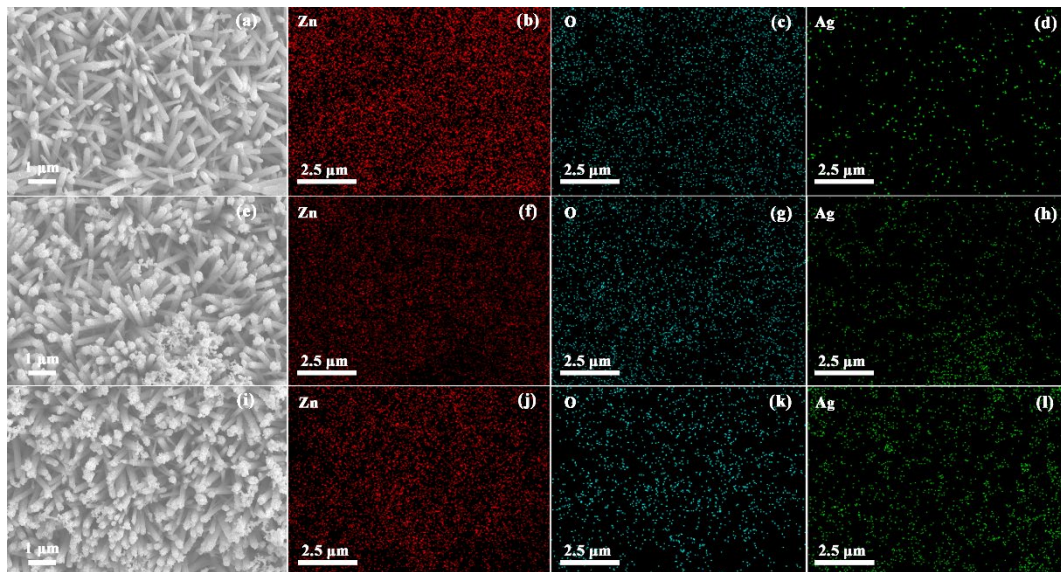
Fig. S1. SEM images of ZnO/PM.

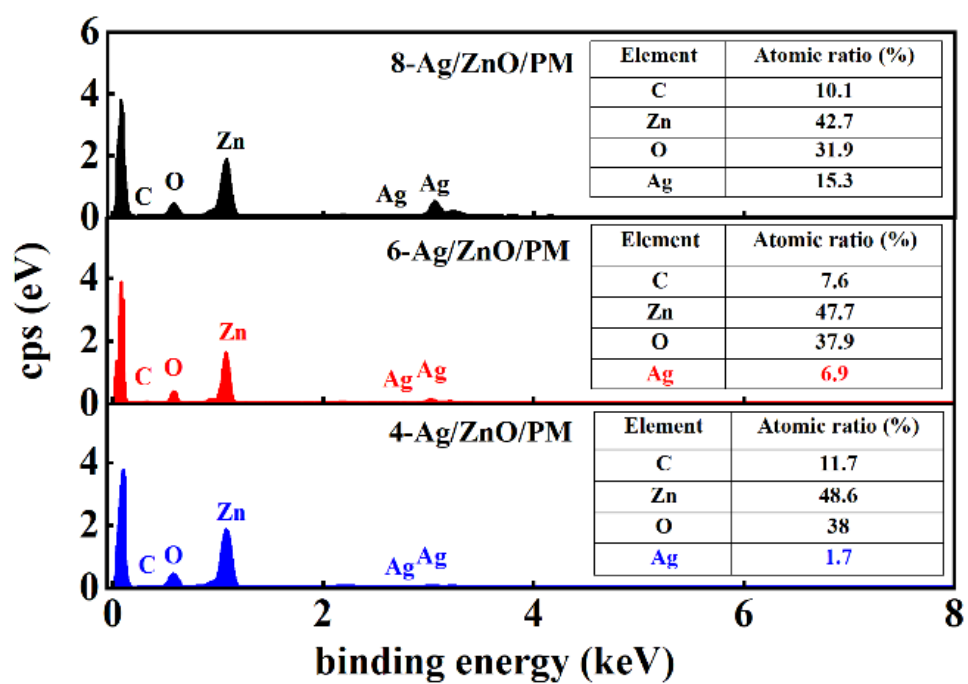**Fig. S2 EDS mapping of different samples. (a-d) 4-Ag/ZnO/PM, (e-h) 6- Ag/ZnO/PM and (i-l) 8- Ag/ZnO/PM.**

Element	Atomic ratio (%)
C	10.1
Zn	42.7
O	31.9
Ag	15.3

Element	Atomic ratio (%)
C	7.6
Zn	47.7
O	37.9
Ag	6.9

Element	Atomic ratio (%)
C	11.7
Zn	48.6
O	38
Ag	1.7

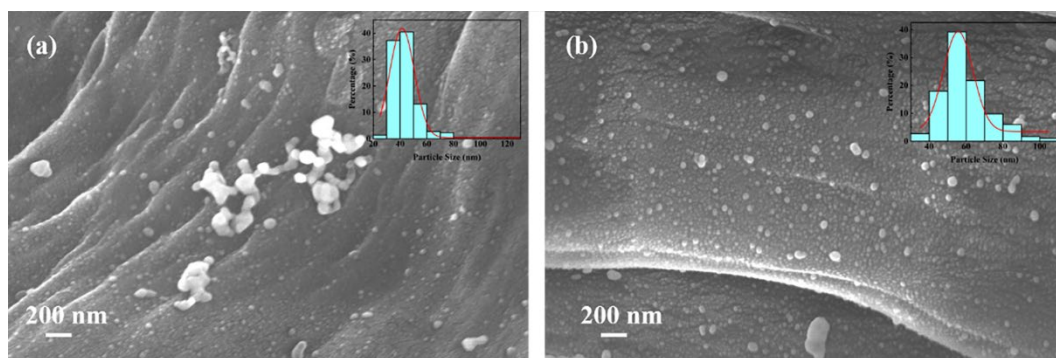**Fig. S3 EDS spectra of different samples and elemental components.**

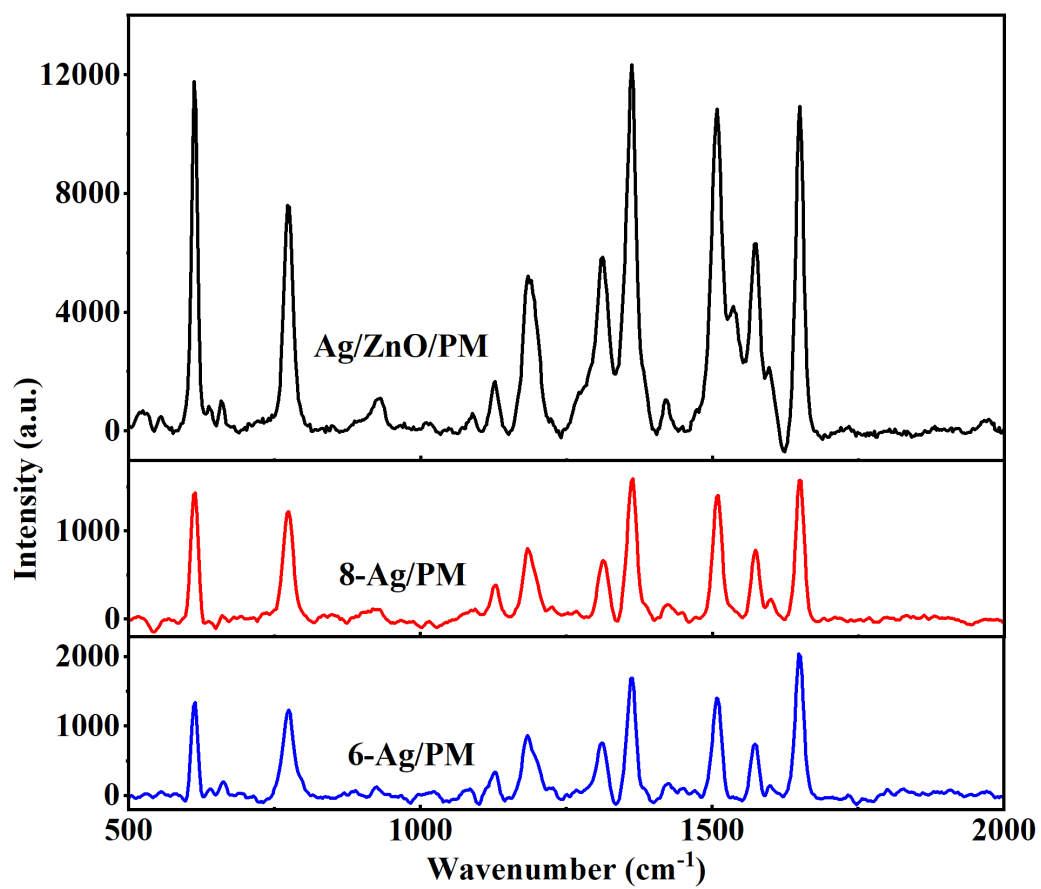**Fig. S4. SEM images of (a) 6-Ag/PM, (b) 8-Ag/ PM.**

Fig. S5. SERS spectra of different samples after soaked in 10^{-6} M R6G for 1 hour.
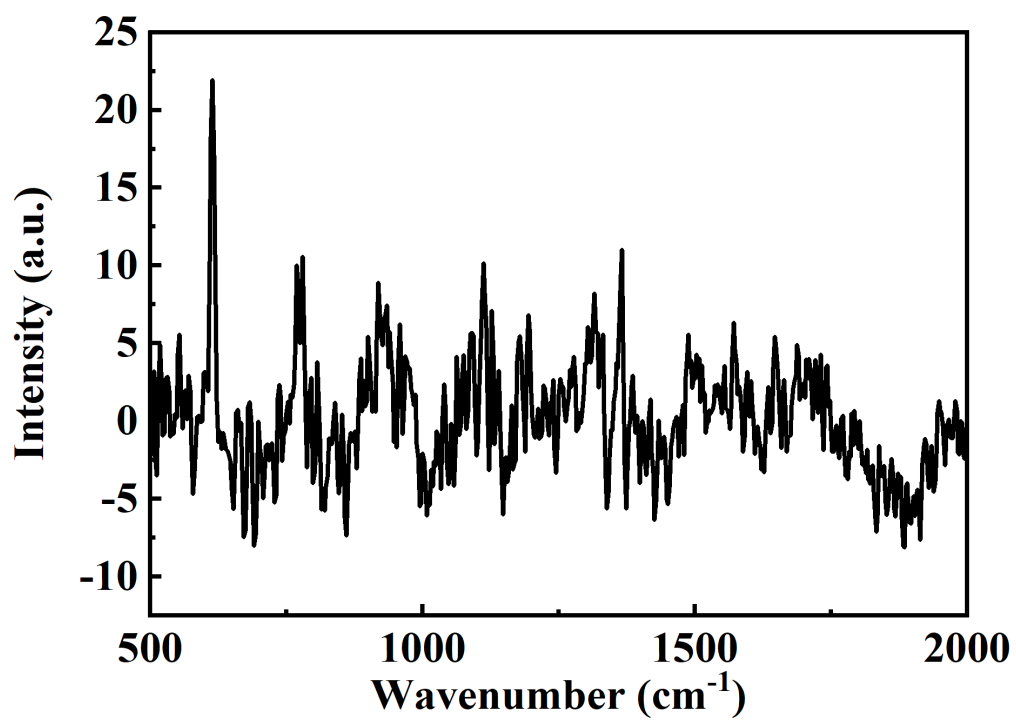
Fig. S6. SERS spectrum of PM substrates after immersion in 10^{-2} M R6G.
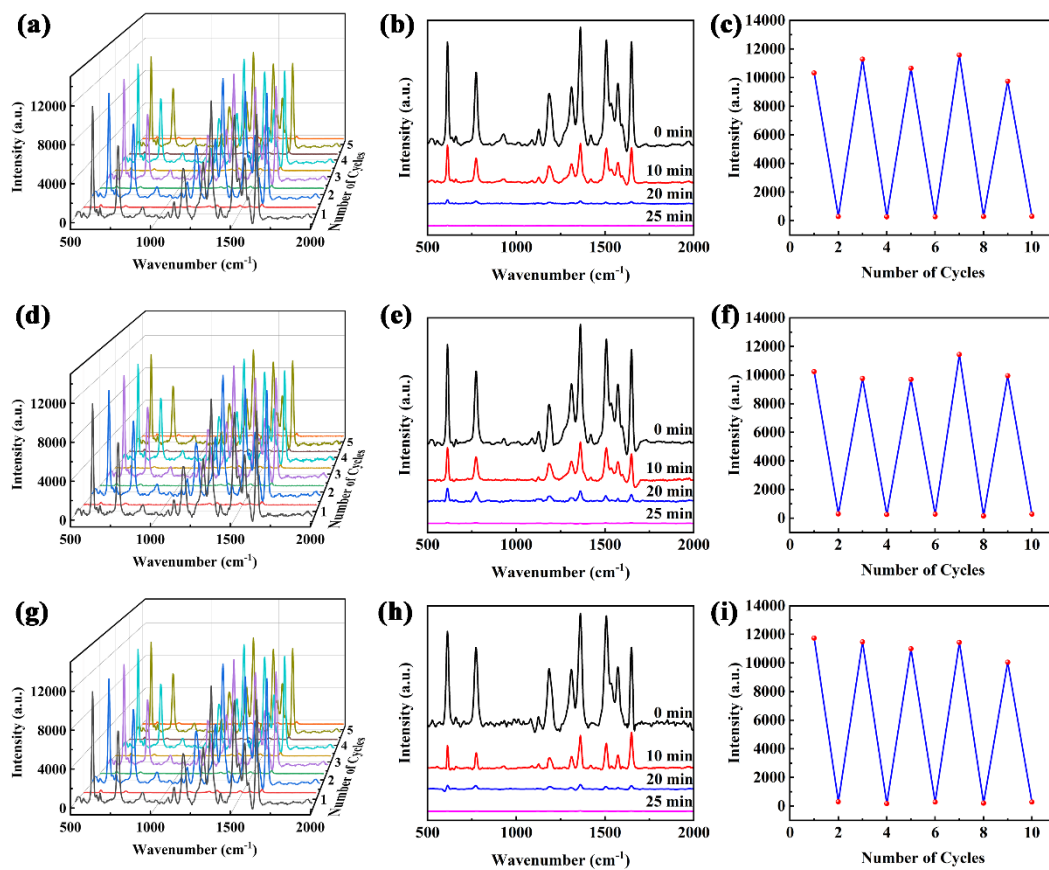
Fig. S7. Self-cleaning performances of different batches. (a-c) the first batch of sample. (d-f) the second batch of sample. (g-i) the third batch of sample.
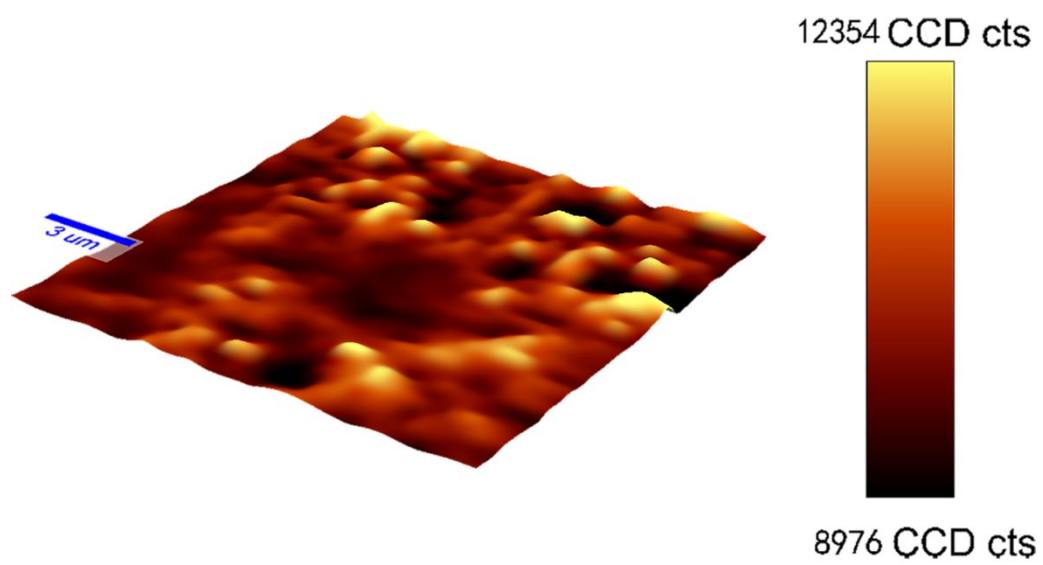
12354 CCD cts

8976 CCD cts

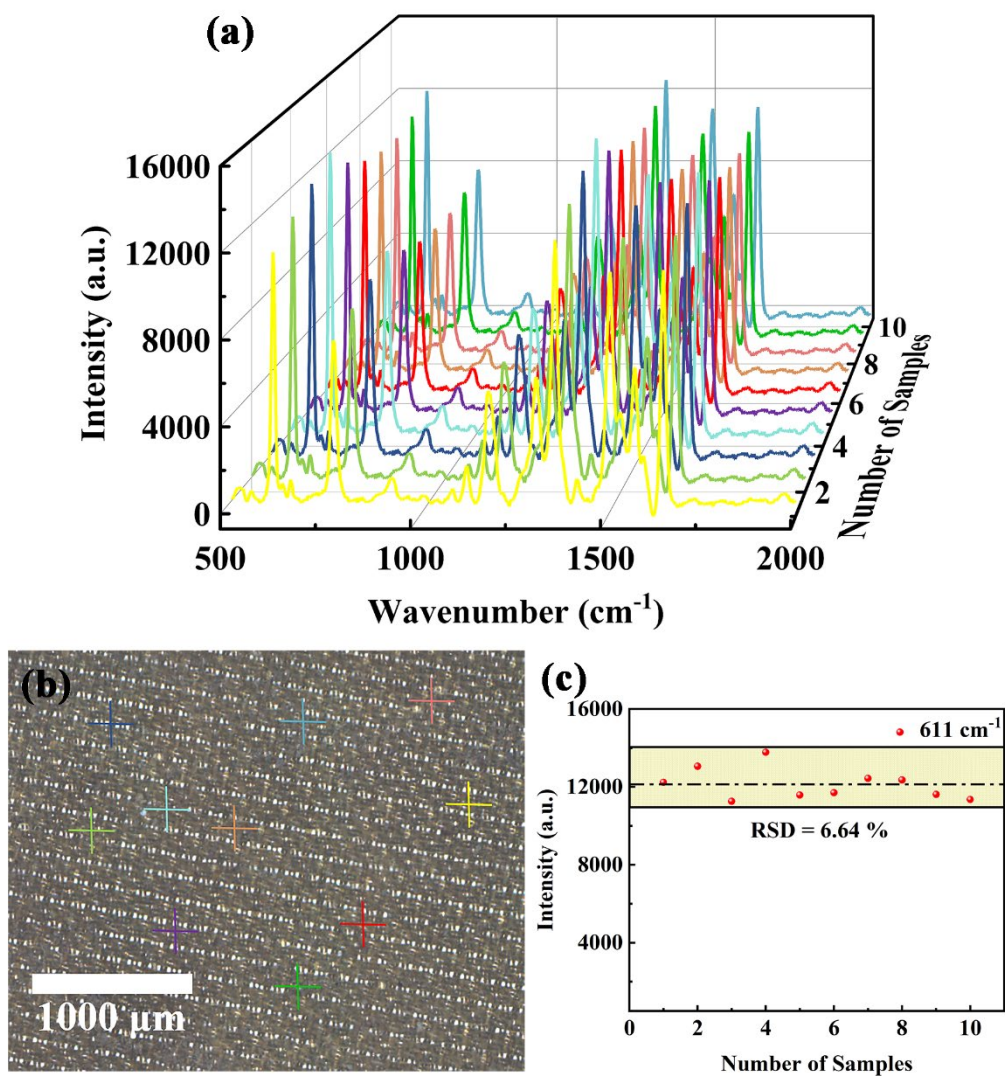**Fig. S8. SERS mapping of Ag/ZnO/PM.**

Fig. S9. (a) SERS spectra of ten random points on the substrate. (b) The position of each point on the micrograph of the substrate (curves and coordinates are unified by color). (c) Distribution of peak intensity at 611 cm⁻¹ for different curves.
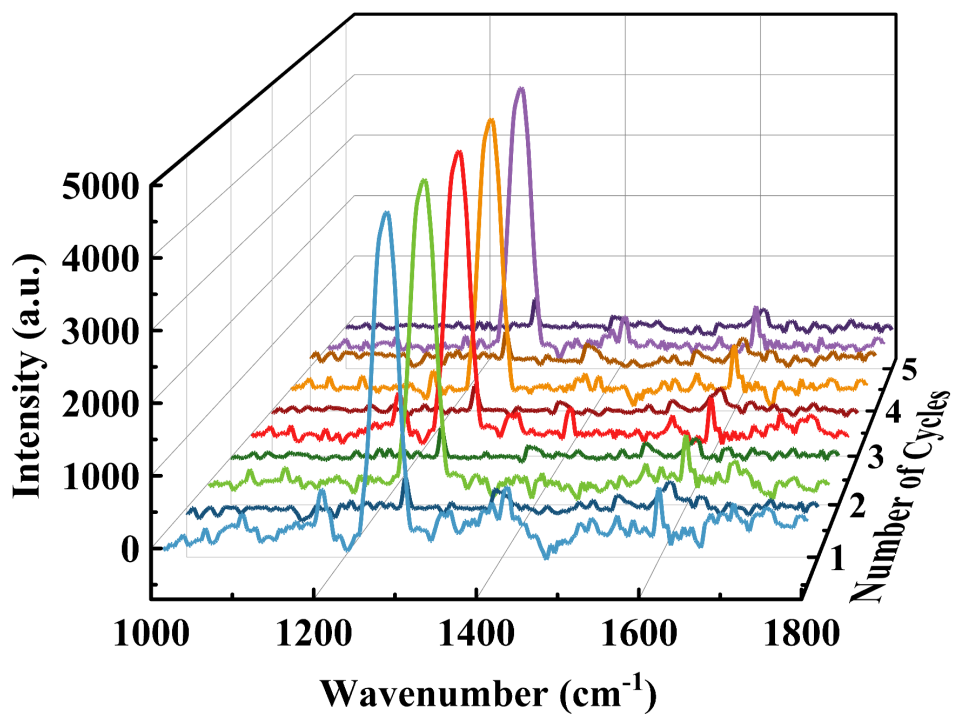
Fig. S10. SERS spectra with five cycles of TC.