Supplementary Information

A highly sensitive SERS sensor based on PVDF/Au nanofibers for trace analysis of nitrite ions

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Materials

Poly(vinylidene fluoride) (PVDF, *M*W = 534000 g.mol^{-1}) and Polyhexenoltone (PCl, *M*W=45000 g.mol^{-1}) were purchased from Sigma-Aldrich. Acetone, N,N-Dimethylacetamide (DMF)，sodium nitrite were obtained from Sinopharm Chemical Reagent Co. Thiram, rhodamine 6G (R6G) and p-aminothiophenol (PATP) were purchased from Aladdin Chemistry Co.

Instrumentation and Characterization

The characterization of the products were analyzed by using JEOLJSM-7500F Scanning Electron Microscope, a BrukerD8 ADVANCEX-ray diffractometer (XRD) with Cu Kα radiation (λ = 1.5418 A), a Nicolet6700 FTIR spectrometer at 4 cm^{-1} resolution, 60 scans, in the 4000-600 cm^{-1} spectral range. X-ray photoelectron spectroscopy (XPS) analysis was performed on a Thermo Scientific ESCALAB QXi.

The SERS properties were analyzed by using an InVia Raman microscope (Renishaw) equipped with a laser emitting at 785 nm. PVDF nanofibers were prepared by electrospinning device (FM1301A, Beijing Future Material Sci-tech Co., Ltd, China).

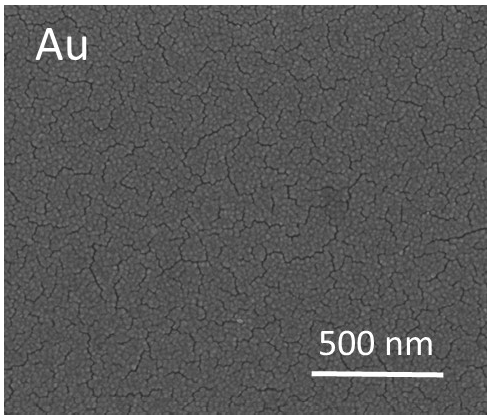

Fig.S1 SEM image of Au NPs deposited on glass plates

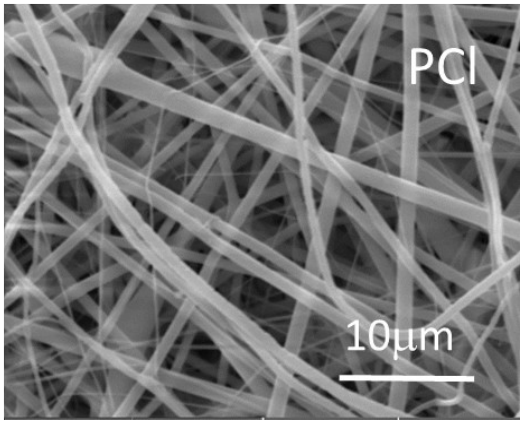

Fig.S2 SEM image of PCl

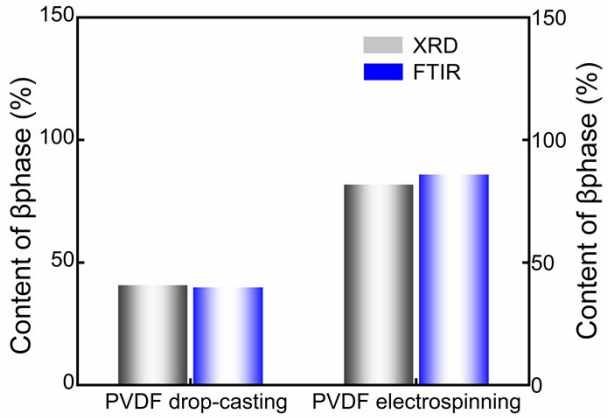

Fig. S3 Comparison of β-phase content in the PVDF drop-casting film and nanospun fibers

Table S1 Comparison of our work with the literatures for the detection limits of R6G, PATP, and thiram

detection platform	R6G	PATP	thiram	Reference
Ag/SiNP microfluidic channe	10^{-4} M			1
Fe_3O_4@SiO_2@Ag		10^{-7} M	10^{-7} M	2
Fe_3O_4/Au			10^{-7} M	
Au–Fe_3O_4	10^{-10} M			3
Silver nanodishes	5×10^{-12} M		10^{-7} M	4
Fe_3O_4@SiO_2@Au@Ag				
Au@ Ag			5×10^{-9} M	5
ASFPAN-Ag	10 ppb			6
AgNPs/PEI/PVA	10^{-10} M	10^{-8} M		7
PVDF/Ag	0.1 nM			8
Fe_3O_4@SiO_2@Ag		10^{-7} M	10^{-6} M	9
NiCo@SiO_2@Ag		10^{-7} M		10
MIL-101(Fe)@Ag		10^{-8} M		11
this work	10^{-11} M	10^{-10} M	10^{-9} M	

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