

Supporting information

Sensitive detection of DNA and DNA methylation using chitosan fiber waveguide platform

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Table of content

1. Overview of DNAs used in this work.....	3
2. Scheme illustration for preparation process of Probe 1 modified PDA microtube and Probe 2 modified Au nanoparticles.....	4
3. SEM and fluorescence emission spectra of chitosan fiber.....	5
4. XPS spectra of chitosan fiber before and after DNA modification.....	6
5. TEM and UV absorption spectrum of synthesized Au nanoparticles.....	7
6. Raman spectroscopy and DLS analysis of Au nanoparticles before and after DNA modification.....	8
7. SEM and EDS spectrum of chitosan fiber before and after sandwich structure forming process.....	9
8. Anti-interference performance of the single fluorescent polymeric microfiber platform in complex biological environment.....	10

Table S1 DNAs used in this work.

Name	Sequence
Probe 1	5'-NH ₂ -GCCGGACGCCTG-3'
Probe 2	5'-GAACGCAACTCC-SH-3'
Unmethylated p16	5'-GGAGTTGCGTTCCAGGCGTCCGGC-3'
Methylated p16	5'-GGAGTTGCGTTCCAGGCGTCC ^m GGC-3'
single-base mismatched p16	5'-GGTGTTCGTTCCAGGCGTCC ^m GGC-3'
three base mismatched p16	5'-GGTGTTCCTTCCTGGGCGTCC ^m GGC-3'
RASSF1A	5'-CCGGCGTGGGCCGACCTCGC-3'
p53	5'-GGCACAAACACGCACCTCAA-3'

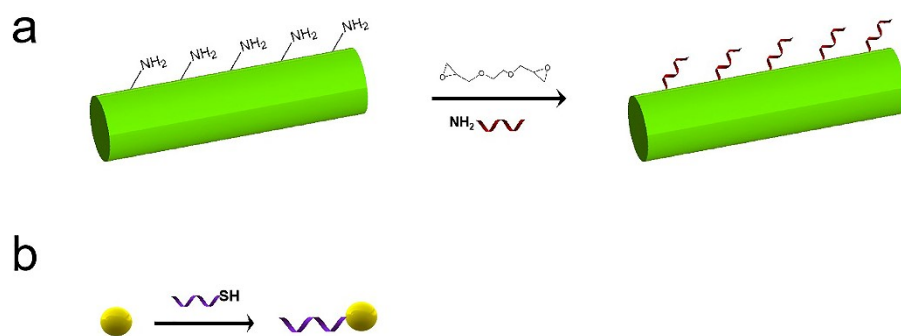


Fig. S1 (a) Scheme illustration for preparation process of Probe 1 modified PDA microtube. (b) Scheme illustration for preparation process of Probe 2 modified Au nanoparticles.

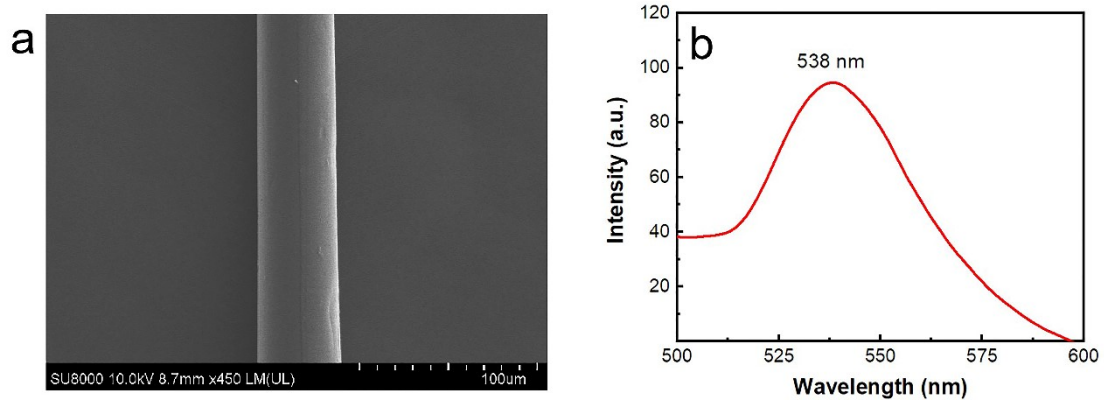


Fig. S2 (a) Scanning electron micrograph of chitosan fiber. (b) Fluorescence emission spectra of chitosan fiber.

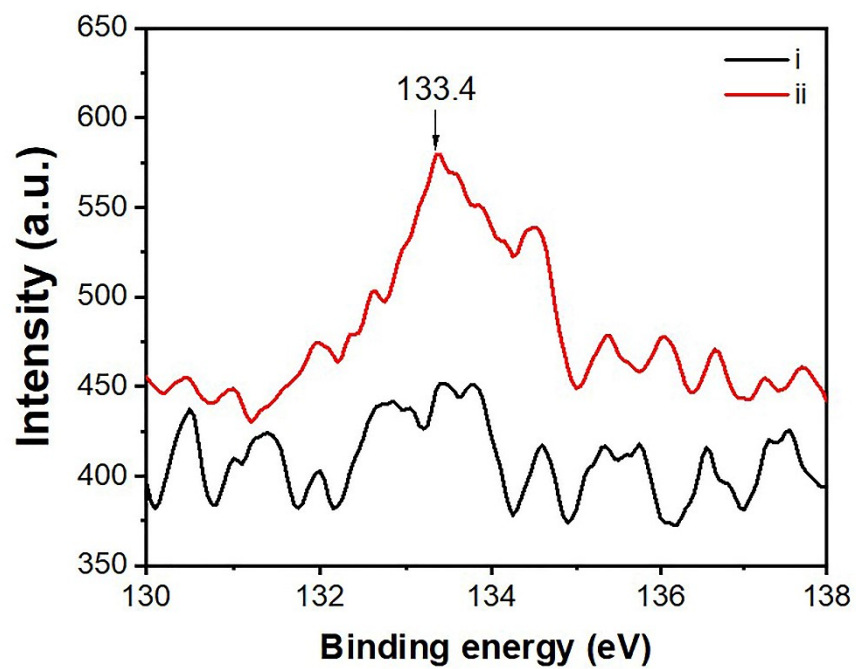


Fig. S3 P 2p XPS spectra of chitosan fiber (i) before and (ii) after DNA modification.

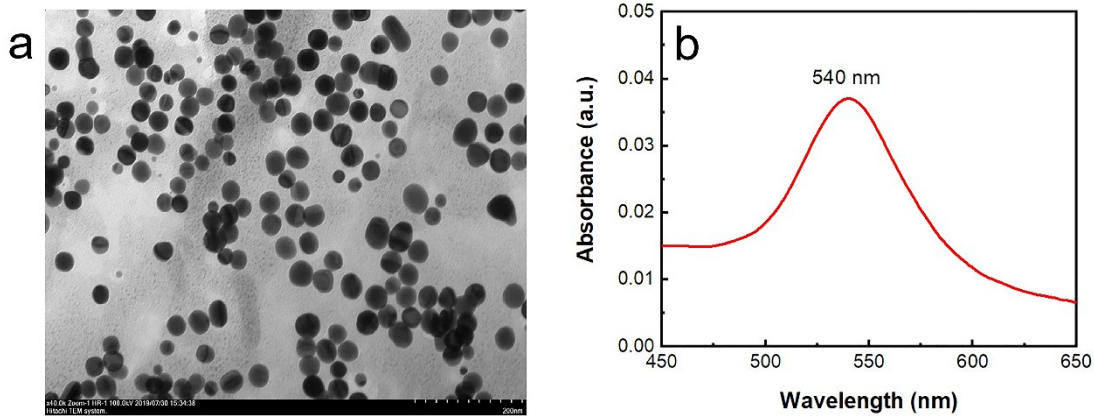


Fig. S4 (a) TEM picture of Au nanoparticles. (b) UV absorption spectrum of Au nanoparticles.

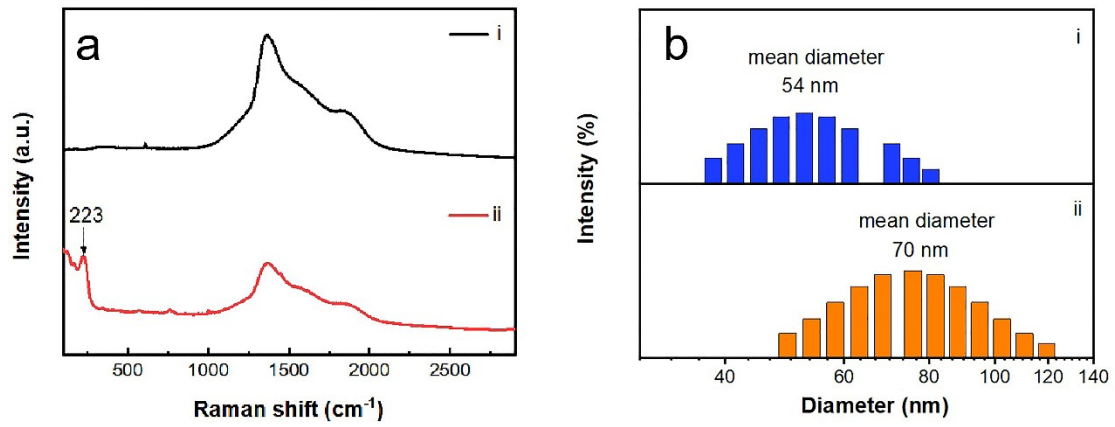


Fig. S5 (a) Raman spectroscopy of Au nanoparticles (i) before and (i) after DNA modification. (b) Dynamic light scattering analysis of Au nanoparticles (i) before and (i) after DNA modification.

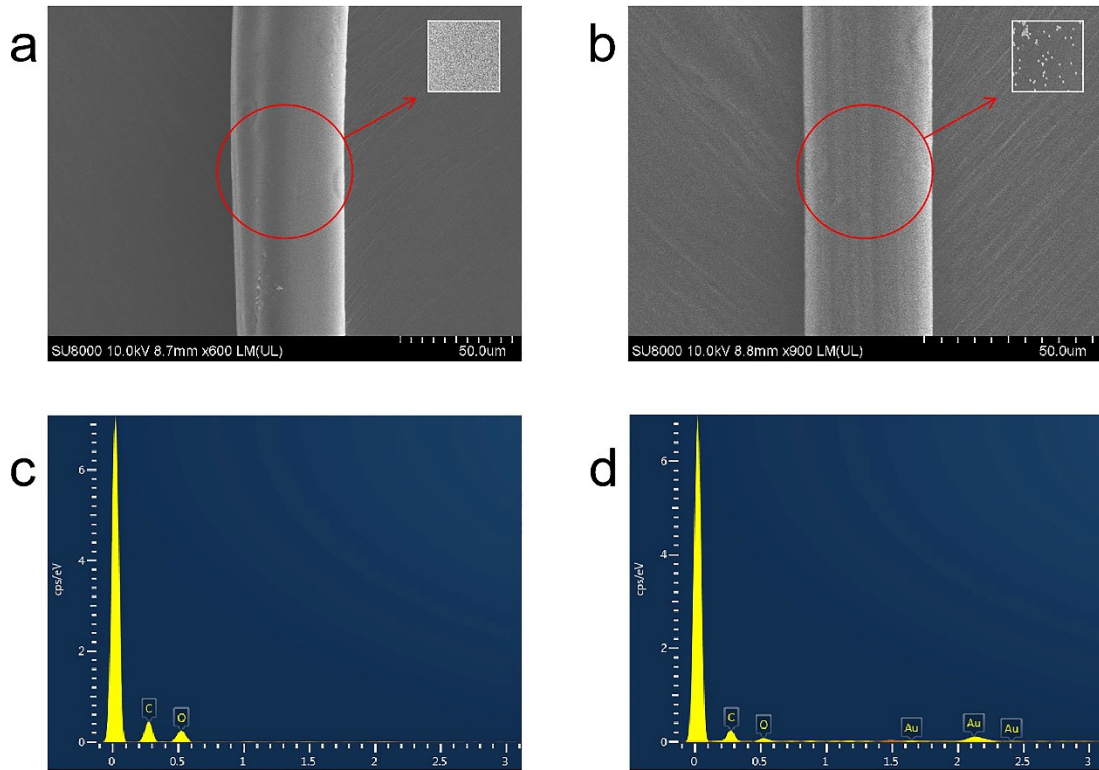


Fig. S6 SEM image of chitosan fiber (a) before and (b) after the sandwich structure forming process. Energy Dispersive Spectrometer of chitosan fiber (c) before and (d) after sandwich structure forming process.

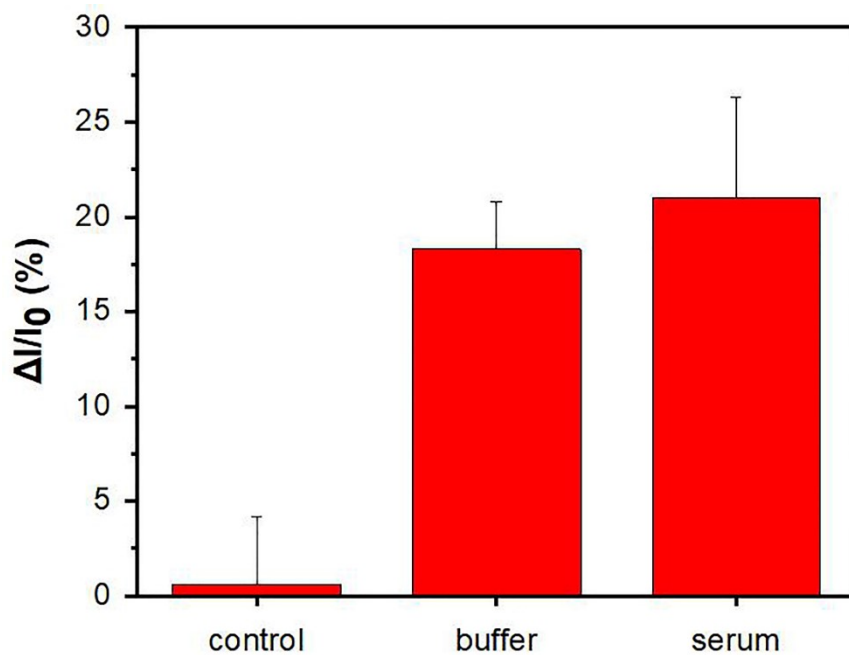


Fig. S7 The fluorescence variation of tip emission for single chitosan fiber after reaction in control solution (without p16), in TAE buffer (with 10 nM p16) and in the buffer mixture solution containing 50% diluted bovine serum (with 10 nM p16).