Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Supporting information

Acid-responsive aggregated SERS nanoparticles for improved tumor diagnose

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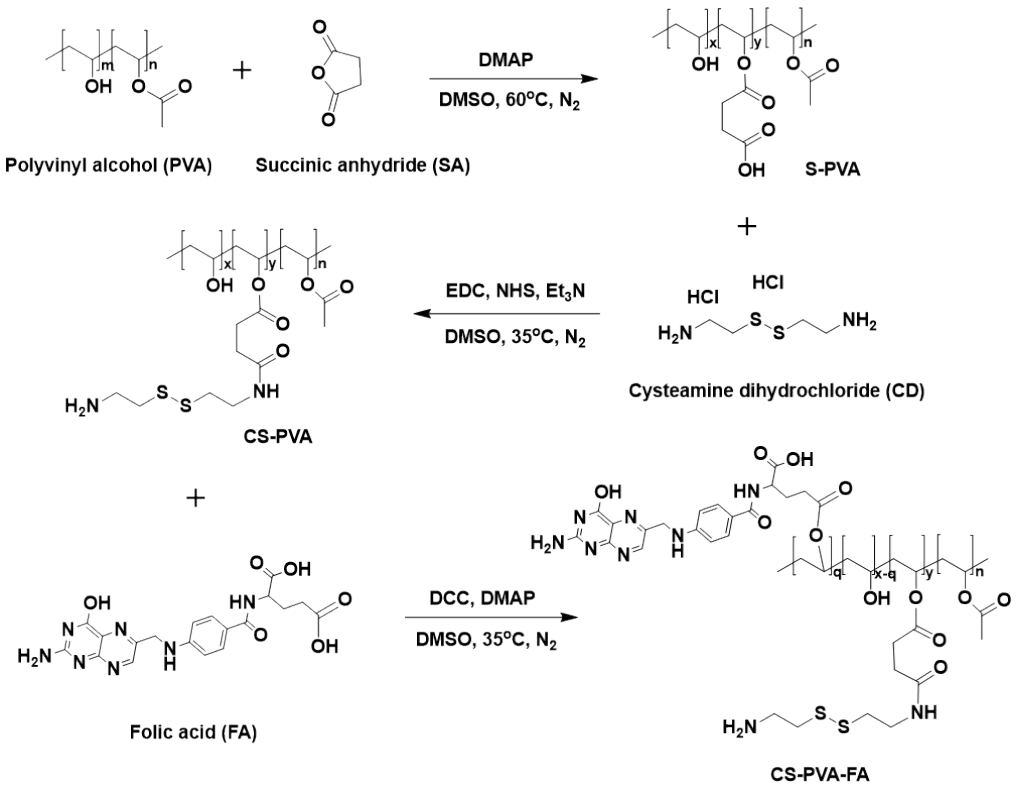

Scheme S1. The synthesis of CS-PVA-FA.

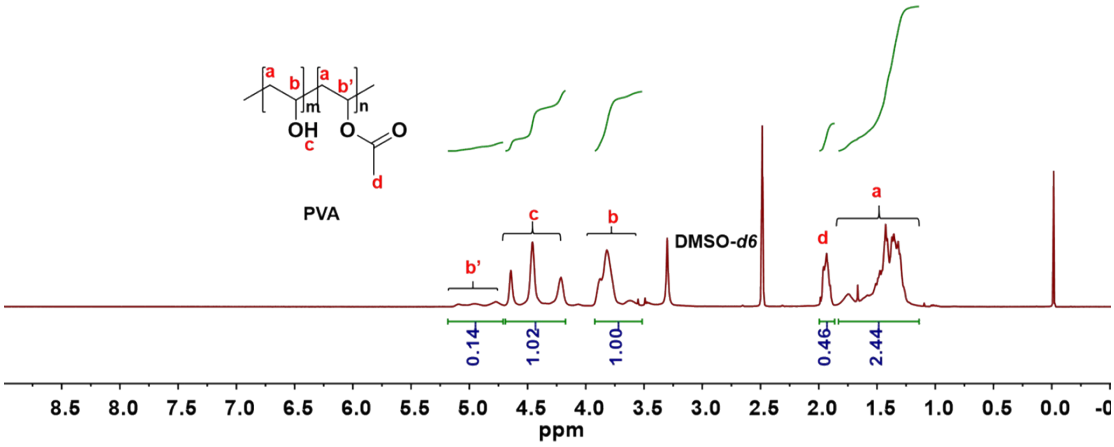

Figure S1. The ^{1}H NMR spectra of PVA in DMSO-*d6* (400 MHz).

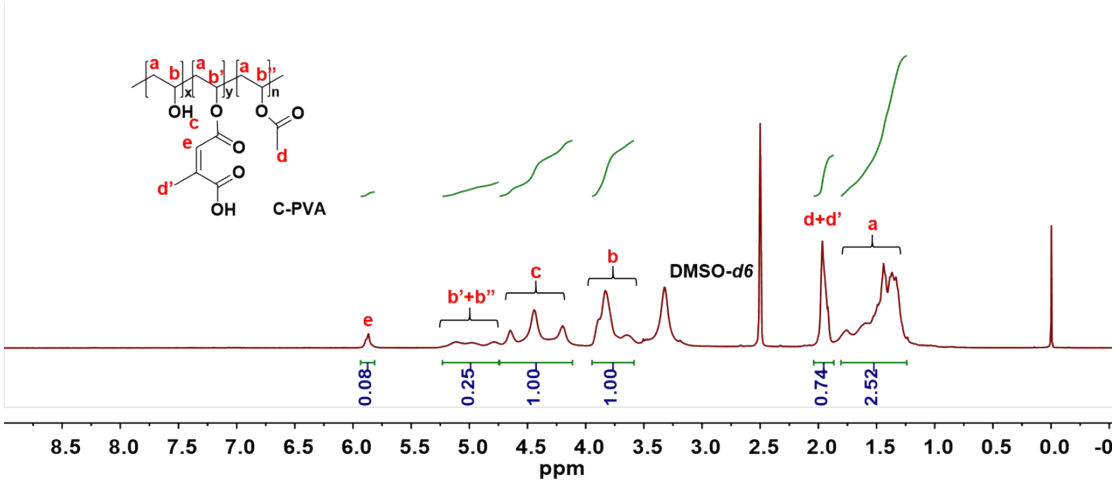

Figure S2. The ^{1}H NMR spectra of C-PVA in DMSO-*d6* (400 MHz).

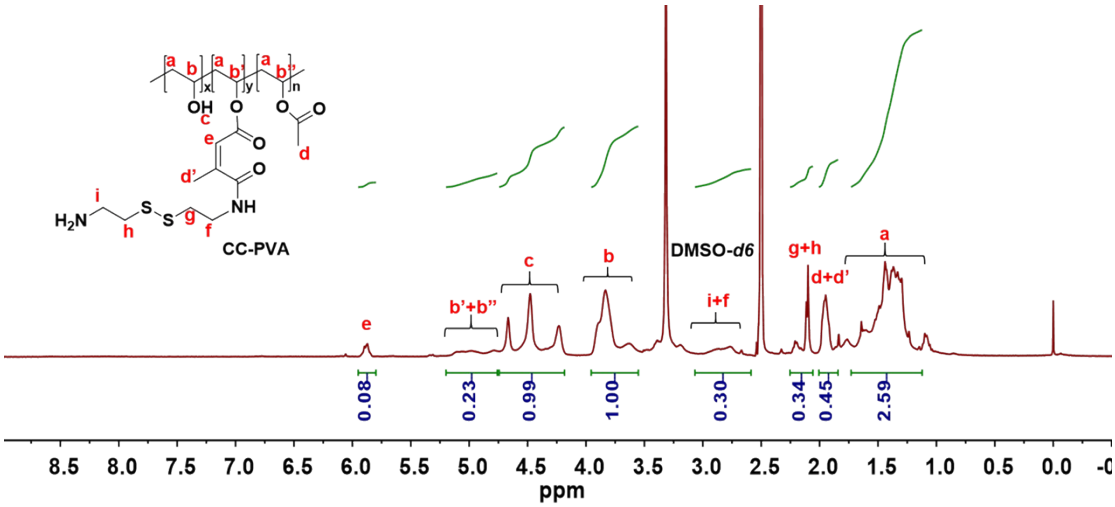

Figure S3. The ^{1}H NMR spectra of CC-PVA in DMSO-*d6* (400 MHz).

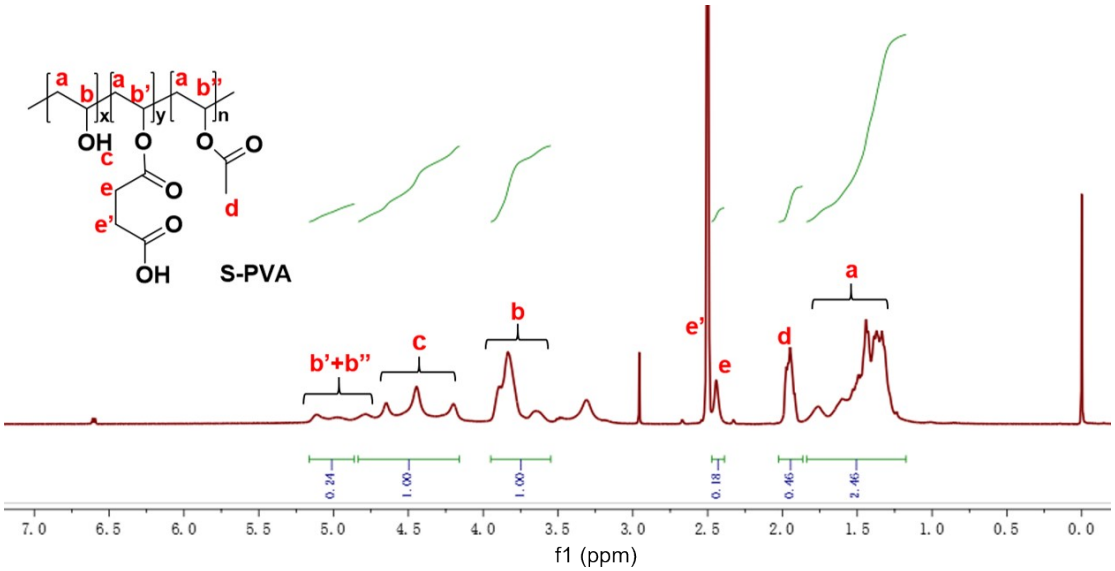

Figure S4. The ^{1}H NMR spectra of S-PVA in DMSO-*d6* (400 MHz).

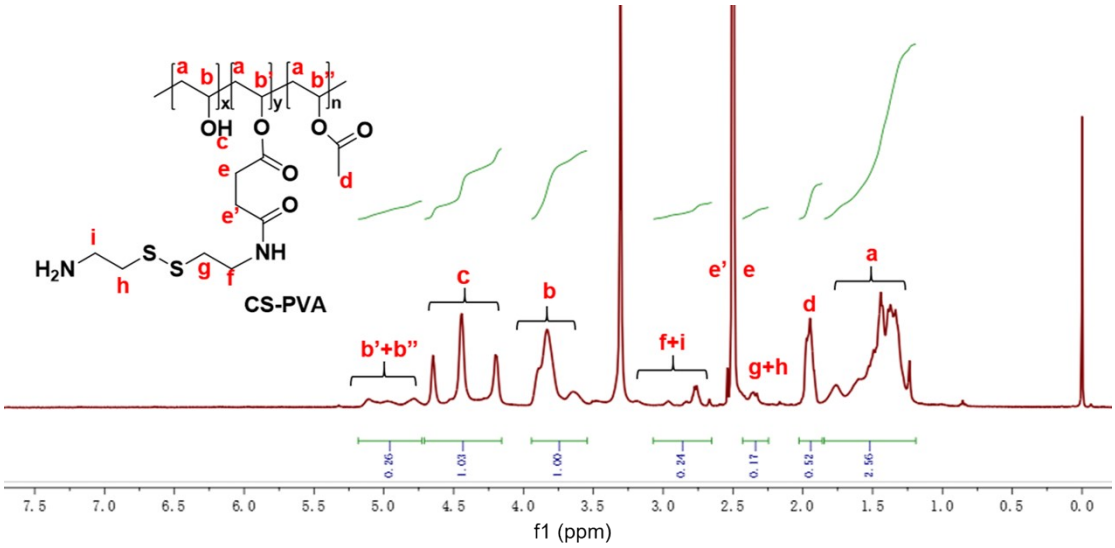

Figure S5. The ^{1}H NMR spectra of CS-PVA in DMSO-*d6* (400 MHz).

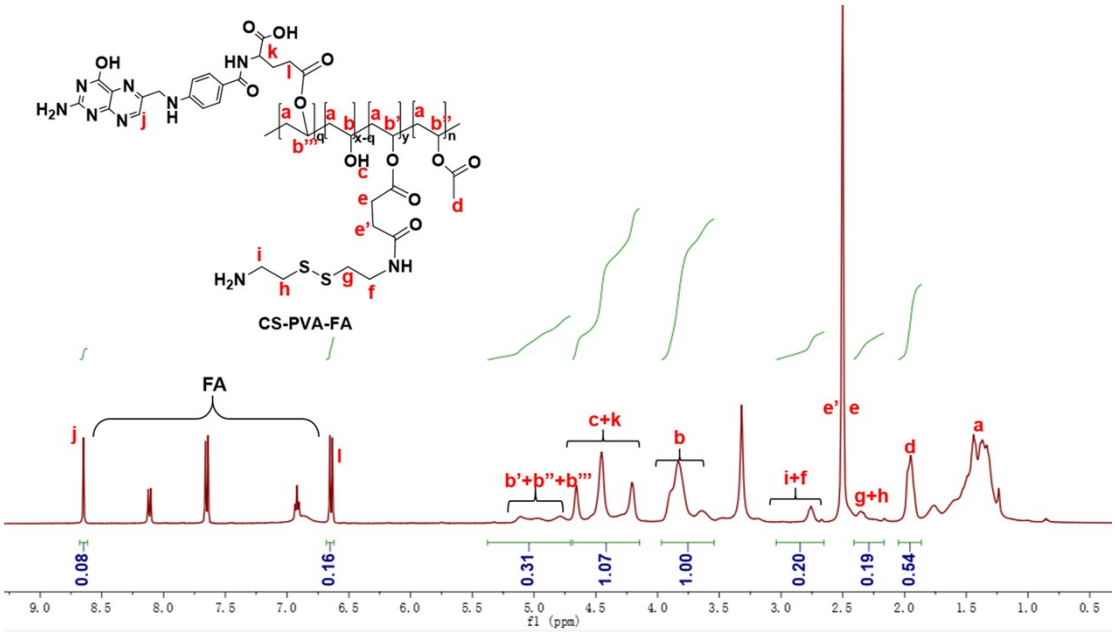

Figure S6. The ^{1}H NMR spectra of CS-PVA-FA in DMSO-*d6* (400 MHz).

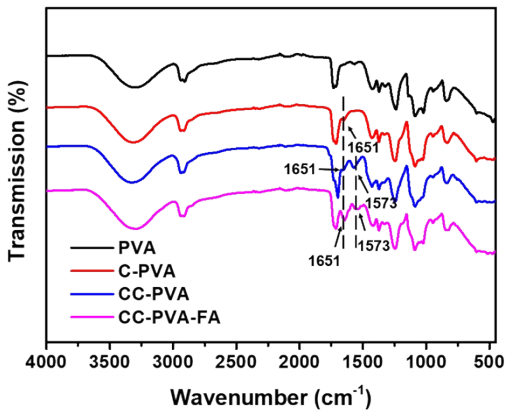

Figure S7. FTIR spectra of different chains.

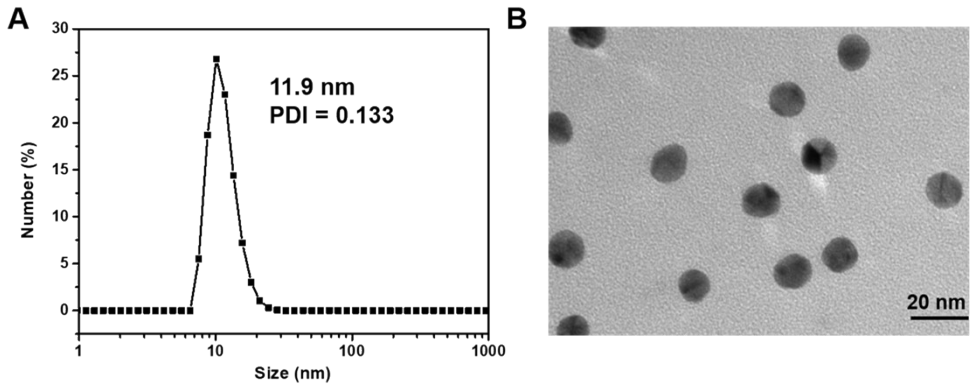

Figure S8. (A) Hydrodynamic diameter distribution and (B) TEM of Au NPs.

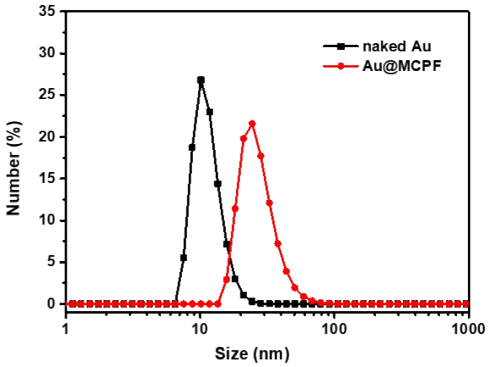

Figure S9. Hydrodynamic diameter distribution of Au NPs and Au@MCPF NPs.

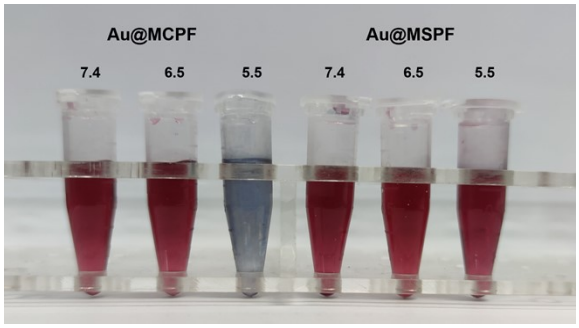

Figure S10. The photo of Au@MCPF NPs and Au@MSPF NPs solution at pH 7.4, 6.5 and 5.5.

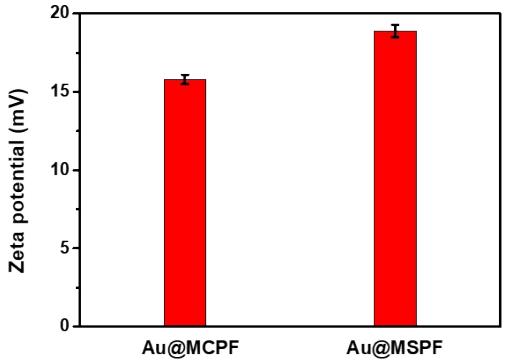

Figure S11. The zeta potential of Au@MCPF and Au@MSPF.

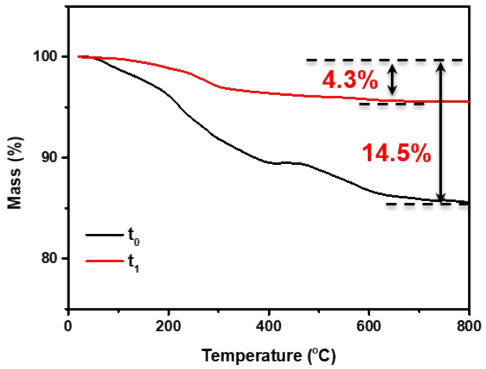

Figure S12. The TG curves of Au@MCPF NPs at pH 5.5, t_0 = 0 h, t_1 = 12 h.

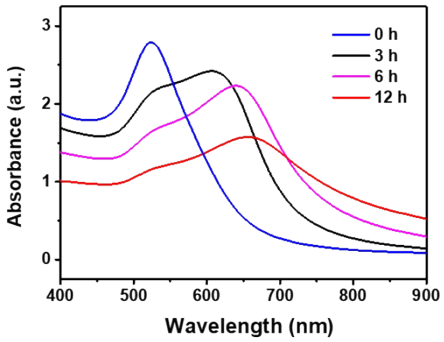

Figure S13. The UV-vis absorbance of Au@MCPF NPs at pH 5.5 with different time.

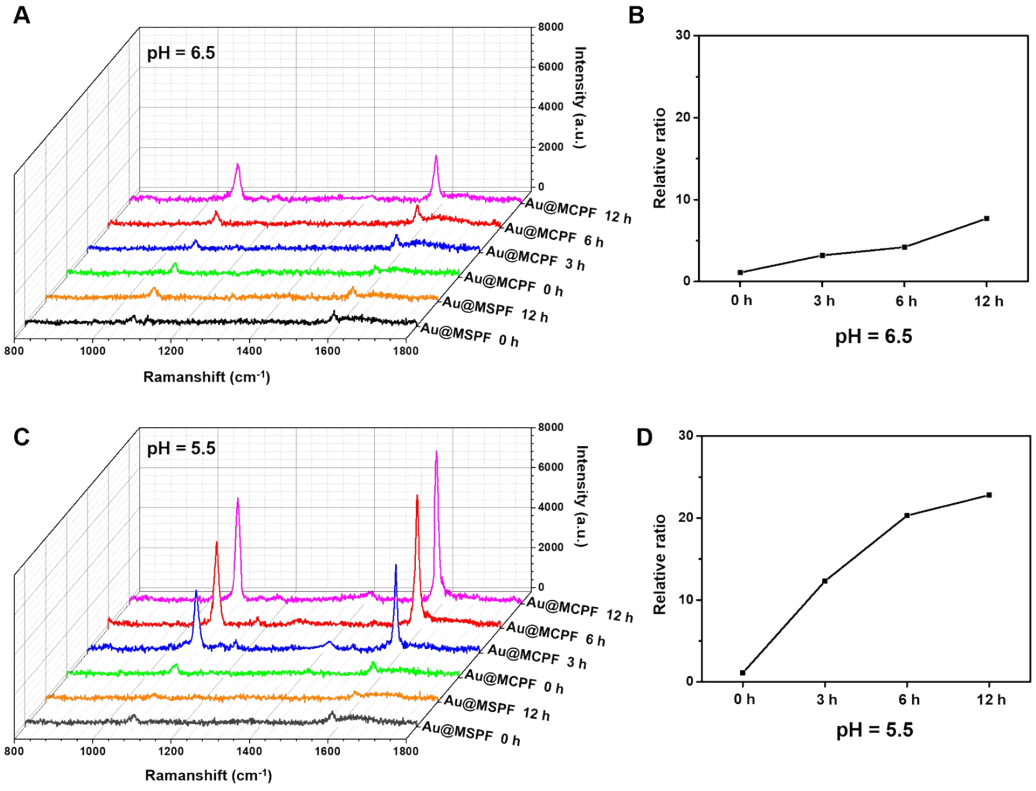

Figure S14. Time study of SERS intensity. (A) The Raman spectra of Au@MCPF and Au@MSPF at different time with pH =6.5. (B) The relative intensity ratio of Au@MCPF and Au@MSPF at different time with pH =6.5. (C) The Raman spectra of Au@MCPF and Au@MSPF at different time with pH =5.5. (D) The relative intensity ratio of Au@MCPF and Au@MSPF at different time with pH =5.5.

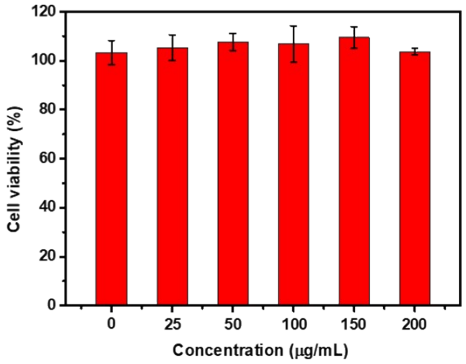

Figure S15. The cytotoxicity of Au@MCPF NPs against MCF-7 cells at different concentration.

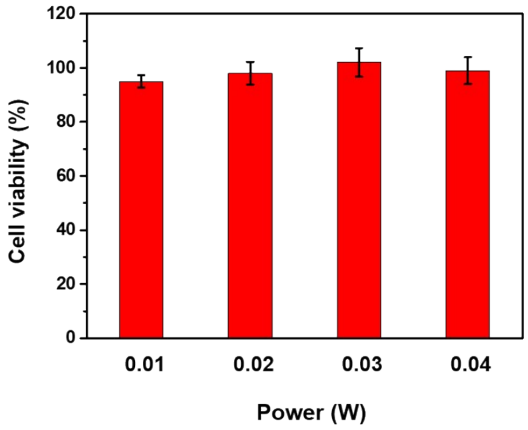

Figure S16. The cell viability of Au@MCPF NPs under the irradiation of 660 nm laser with different power for 5 min.

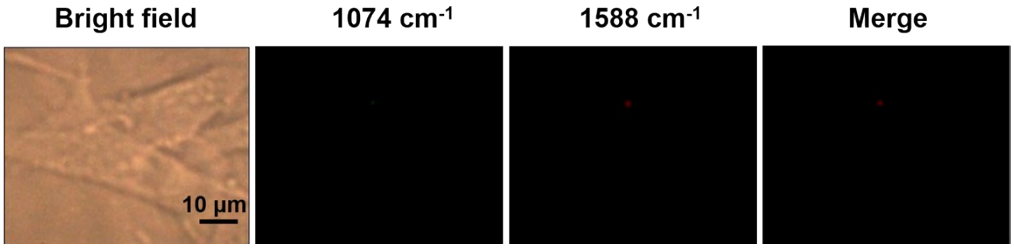

Figure S17. The SERS imaging of Au@MCPF NPs in 3T3 cells after 4 h. The scale bar is 10 μm.