Electronic Supplementary Material (ESI) for Analyst.

Supporting Information

Differential study on oxidized/reduced ascorbic acid induced tumor cells' apoptosis under hypoxia

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Experimental Procedures

Cell Culture. Human hepatocellular carcinoma cell line (HepG2), mouse skin melanoma cell line (B16-F10) and human hepatocyte cell line (HL-7702) were incubated in DMEM and RPMI-1640 cell culture medium, respectively, with addition of 10% fetal bovine serum (FBS) and 1% penicillin-streptomycin. The cells were incubated in a humidified incubator (37 °C, 5% CO_2).

MTT. Cytotoxicity was measured by applying the MTT assays under hypoxic conditions. HepG2 cells were seeded in 96-well plates (5 x 10^4 cells/well) and cultured for 24 h (37 °C, 5% CO_2). Subsequently, fresh medium containing SiNPs and SiNP@PPF were added to each well and incubated for different time (3, 6, 12 and 24 h). At 37 °C, the medium was removed, replacing with the medium containing MTT (0.5 mg/mL) followed by a 4 h incubation. Finally, DMSO (100 µL) was added to dissolve the produced formazan, and the absorbance at 490 nm of each well was measured using a microplate reader to calculated the survival rate of the cells.

Fluorescence stability test: 200 µg /mL of SiNP@PPF sample was continuously scanned in a fluorescence spectrometer under 405 excitation and 452 nm emission condition for 30 mins, and the FL intensities were recorded every min.

Supplementary Figures

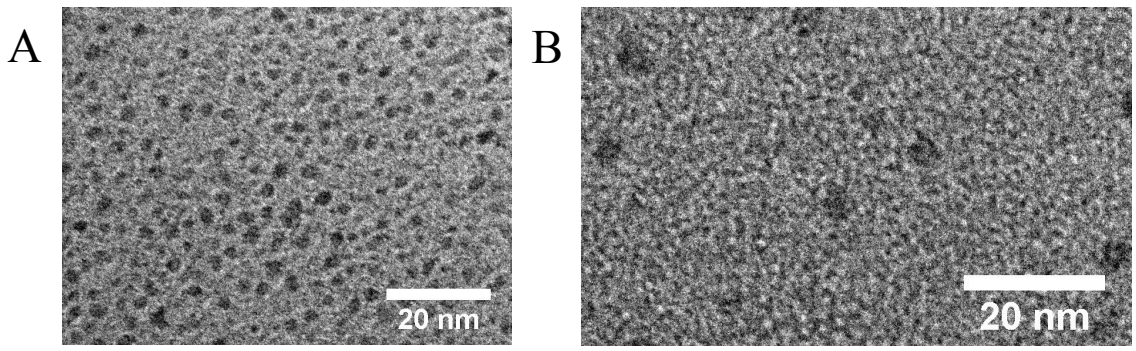
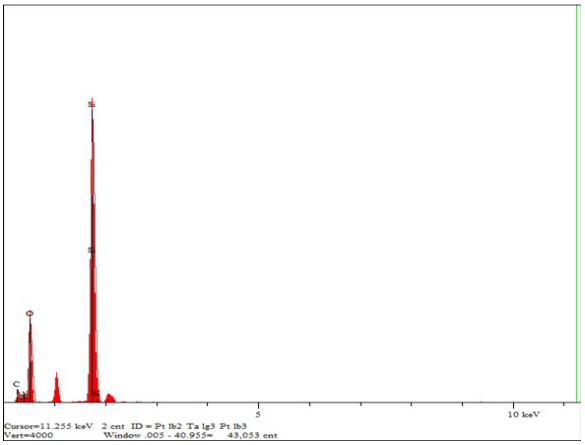
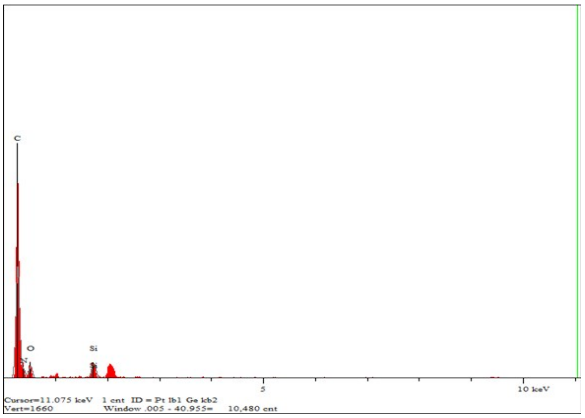


Figure S1. The TEM images of the (A) SiNPs and (B) SiNP@PPF.



Elt.	Line	Intensity (c/s)	Conc	Units
C	Ka	16.46	11.111	wt.%
N	Ka	17.46	11.575	wt.%
O	Ka	109.96	34.393	wt.%
Si	Ka	554.07	42.921	wt.%
			100.000	wt.%



Elt.	Line	Intensity (c/s)	Conc	Units
C	Ka	91.70	51.082	wt.%
N	Ka	6.58	25.755	wt.%
O	Ka	9.16	19.317	wt.%
Si	Ka	13.22	3.847	wt.%
			100.000	wt.%

Figure S2. EDX results of the SiNP (up) and SiNP@PPF (Down).

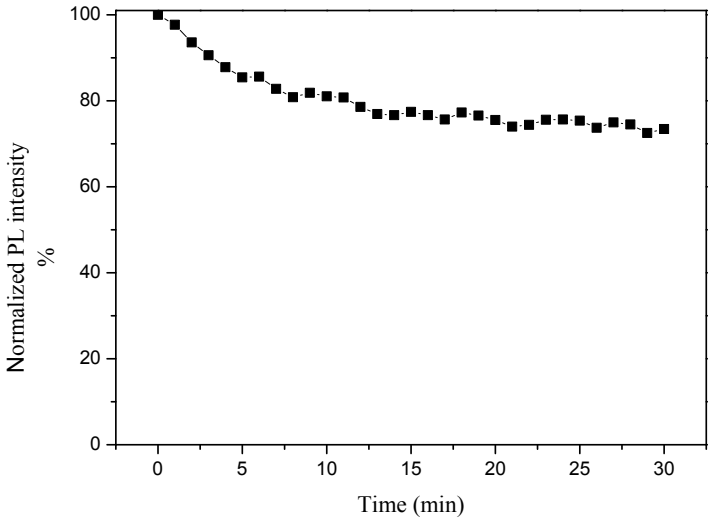


Figure S3. Fluorescence stability test of the SiNP@PPF .

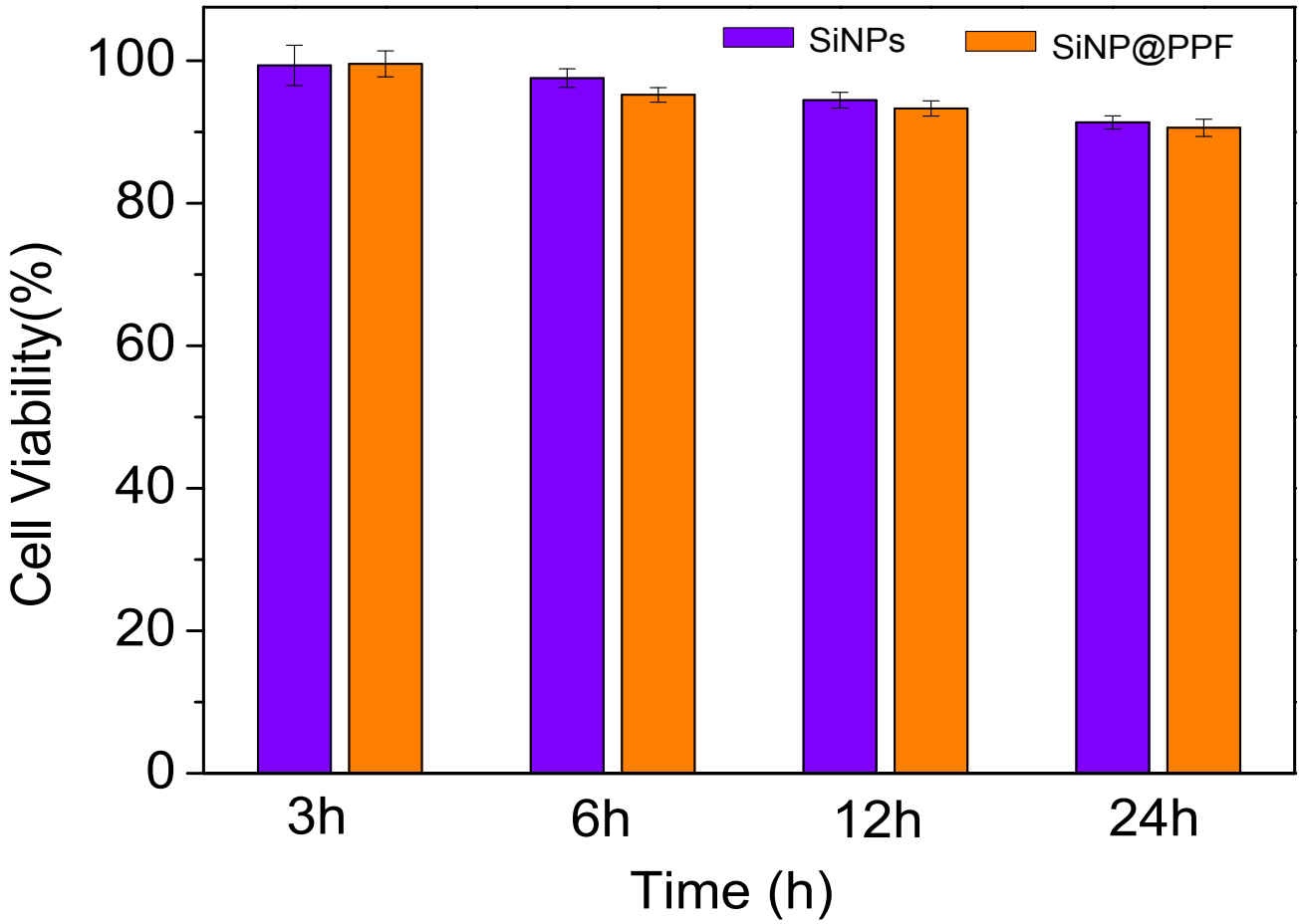


Figure S4. Cell viability test at different time for HepG2 cells treated with SiNPs (Purple) and SiNP@PPF (Orange) under hypoxia.

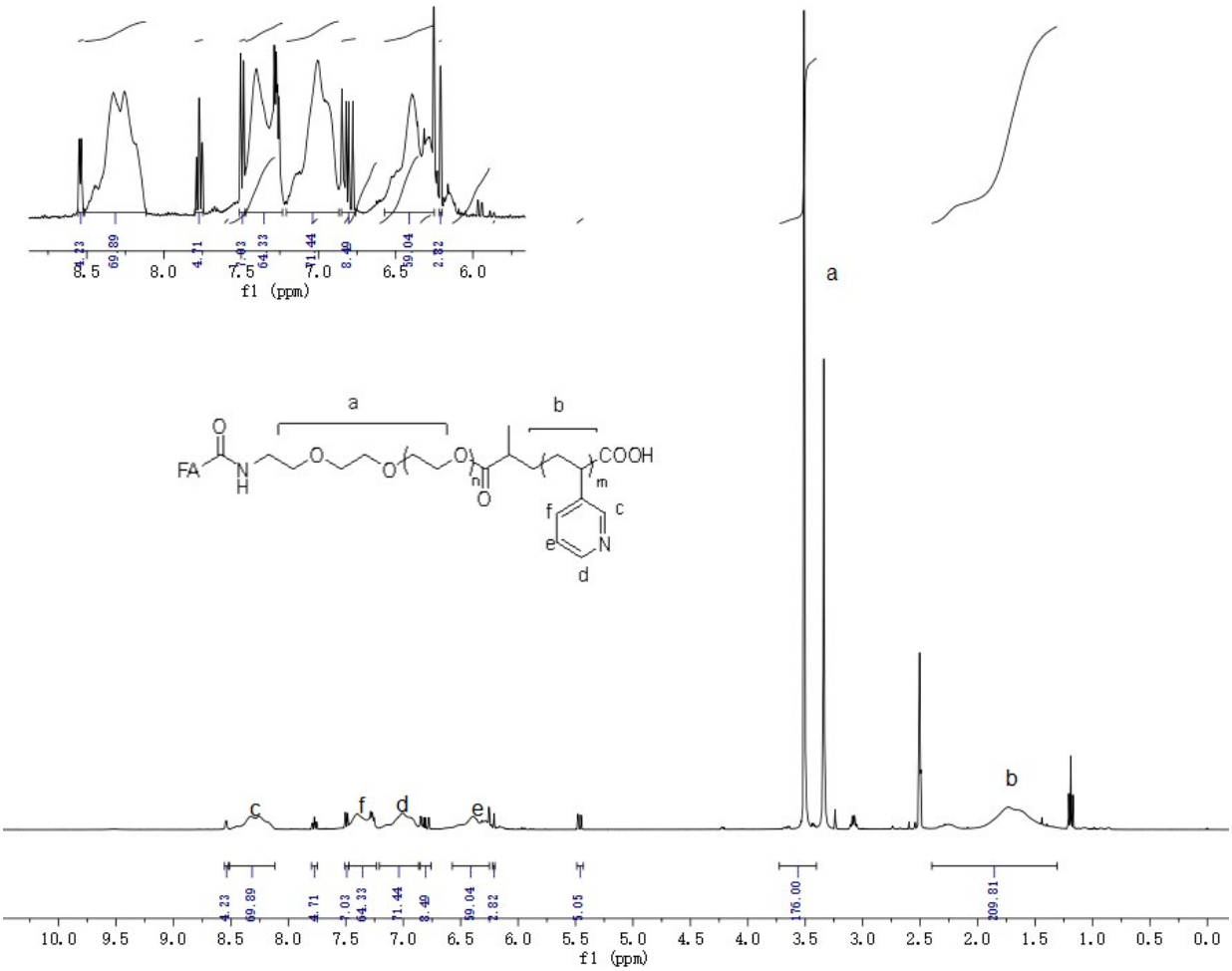


Figure S5. ^{1}H NMR spectrum of HOOC-PVP-PEG-FA provided by Xin Qiao Biotechnology (Hangzhou, China).

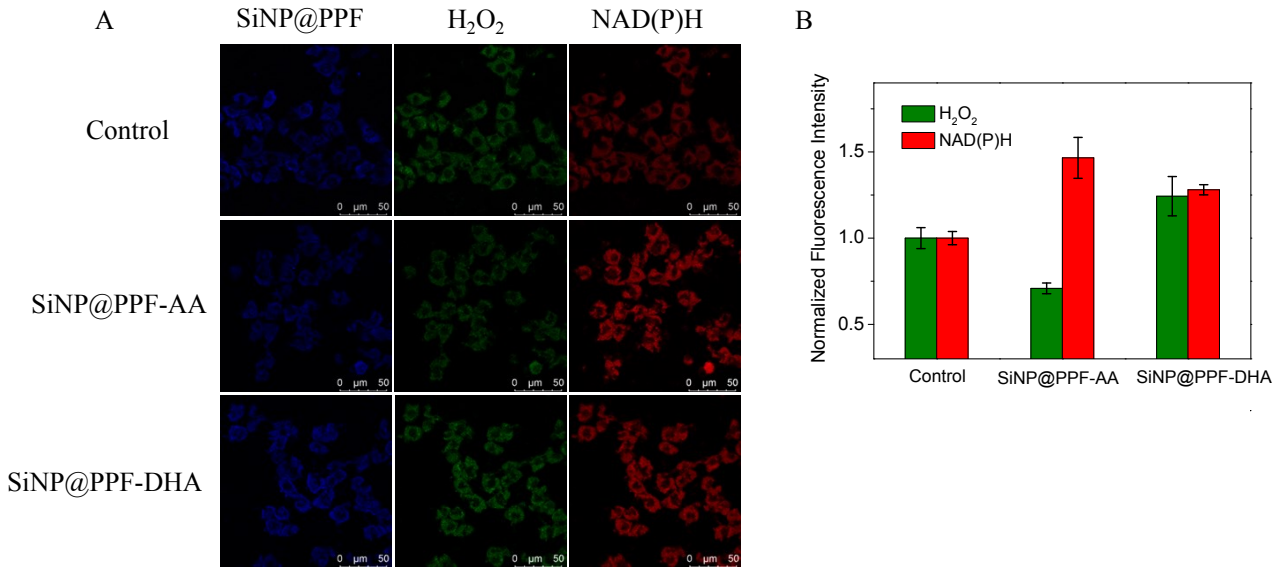


Figure S6. Confocal fluorescence images of H_2O_2 and NAD(P)H in B16-F10 cells incubated with SiNP@PPF-AA/DHA under hypoxia (1% O_2) for 6 h. (B) The quantitative fluorescence intensities of results correspond to (A). Scale bars are 50 μm.