Tumor Microenvironment Responsive Mesoporous Silica

Nanoparticles for Dual Delivery of Doxorubicin and Chemodynamic

Therapy (CDT) Agent

Yuan Zhang^a, Omer Eltayeb^a, Yating Meng^a, Guomei Zhang^a, Yan

Zhang^a, Shaomin Shuang^a, Chuan Dong^{*,a}

^a: Institute of Environmental Science, and School of Chemistry and Chemical Engineering, Shanxi University, No.92 Wucheng rd., Taiyuan 030006, China.



Figure S1 The UV-Vis spectra of FA, BSA, BSA-FA and BSA/MnO₂-FA



Figure S2 TEM mapping analysis of MPPF in the dark field (A); (B)-(E) the distribution of Si, O, Fe, Mn; (F) the elemental overlay in the as-synthesized MPPF.



Figure S3 The BJH pore size distribution analysis of MSN (blue line) and MPPF (red line)

Polymer	BET surface	Pore Value	Pore size	Zeta potential
	(m ² /g)	(cm ³ /g)	(nm)	(mV)
MSN	1152.17	1.32	2.98	-22.0
MPF				-13.6
MPP				21.2
MPPB				-6.9
MPPF	54.10	0.20	Disappear	-12.3

Table S1 Surface characterization of prepared nanoparticles



Figure S4 Surface Zeta potentials of MSN, MPF, MPP, MPPB, and MPPF



Figure S5 FTIR spectra of the dried powders MSN, MP, MPP and MPPF



Figure S6 (A) The UV-Vis spectra of BSA/MnO₂ at different time intervals; (B) Suspension stability test about MPPF at 0 hours (upper) and 12 hours (underneath)



Figure S7 The confocal imaging of FITC labeled MPPF for PC-12 cells. Scale bar: 20 $\mu m.$



Figure S8 The CLSM fluorescence imaging of FITC labeled MPPF for SMMC-7721 cells. Scale bar: 20 $\mu m.$