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MDPI

Article

Mitochondria-Targeted Fluorescent Nanoparticles with Large Stokes Shift for Long-Term BioImaging

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Apparatus

Nuclear magnetic resonance (NMR) spectra were recorded on Bruker AVANCE III 400 spectrometer with dimethyl sulfoxide-d6 (DMSO-d_6) as the solvents at 25℃. FTIR spectra were recorded on a Paragon 1000 instrument by the KBr sample holder method. DLS measurements were recorded on a Malvern Zetasizer Nano S device with a 4.0 mW laser operating at λ=633 nm. All samples of 0.1 mg mL^{-1} were tested with a scattering angle of 173°at 37℃. TEM studies were performed with a JEM-2010HT instrument operated at 200 kV to observe the shape and size of the micelles. Samples were prepared by directly dropping the solution onto carbon-coated copper grids and then air-drying at room temperature overnight before measurement. The UV-vis spectra were measured on a Perkin-Elmer Lambda 20/2.0 UV-vis spectrophotometer. At room tempreture, the fluorescence spectra were recorded on a QM/TM/RM fluorescence spectrophotometer (Photon Technology International, Inc.). Molecular weight was determined through a MS system (Agilent).

Materials

4-methoxy-o-Phenylenediamine (98%, Adamas), ethyl pyruvate (99%, Adamas), K_2CO_3 (99.0%, Greagent), Acetone (99.5%, Adamas), 3-bromoprop-1-ene (95%, Matrix), ethyl acetate (99.8%, Adamas), $MgSO_4$ (Fluka, 99.0%), N-(4-formylphenyl)acetamide (Aladdin, 99.0%), sulfuric acid (96%, Adamas), (E)-4-bromobut-2-enoic acid (Aladdin, 99.0%), N-hydroxysuccinimide (NHS, 99%, Adamas), 3-(4,5-dimethyl-thiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT, Sigma), anhydrous ethanol and peptide (AC-Kr-(Cha)-r-(Cha)-r-(Cha)-r)(Remark:r is D-Arg),98%, GL Biochem) were used as received without purification. DMEM culture medium, and fetal bovine serum (FBS) were purchased from Gibco.L929 mouse fibroblast and IOSE-80 human ovarian epithelium cells were purchased from ATCC

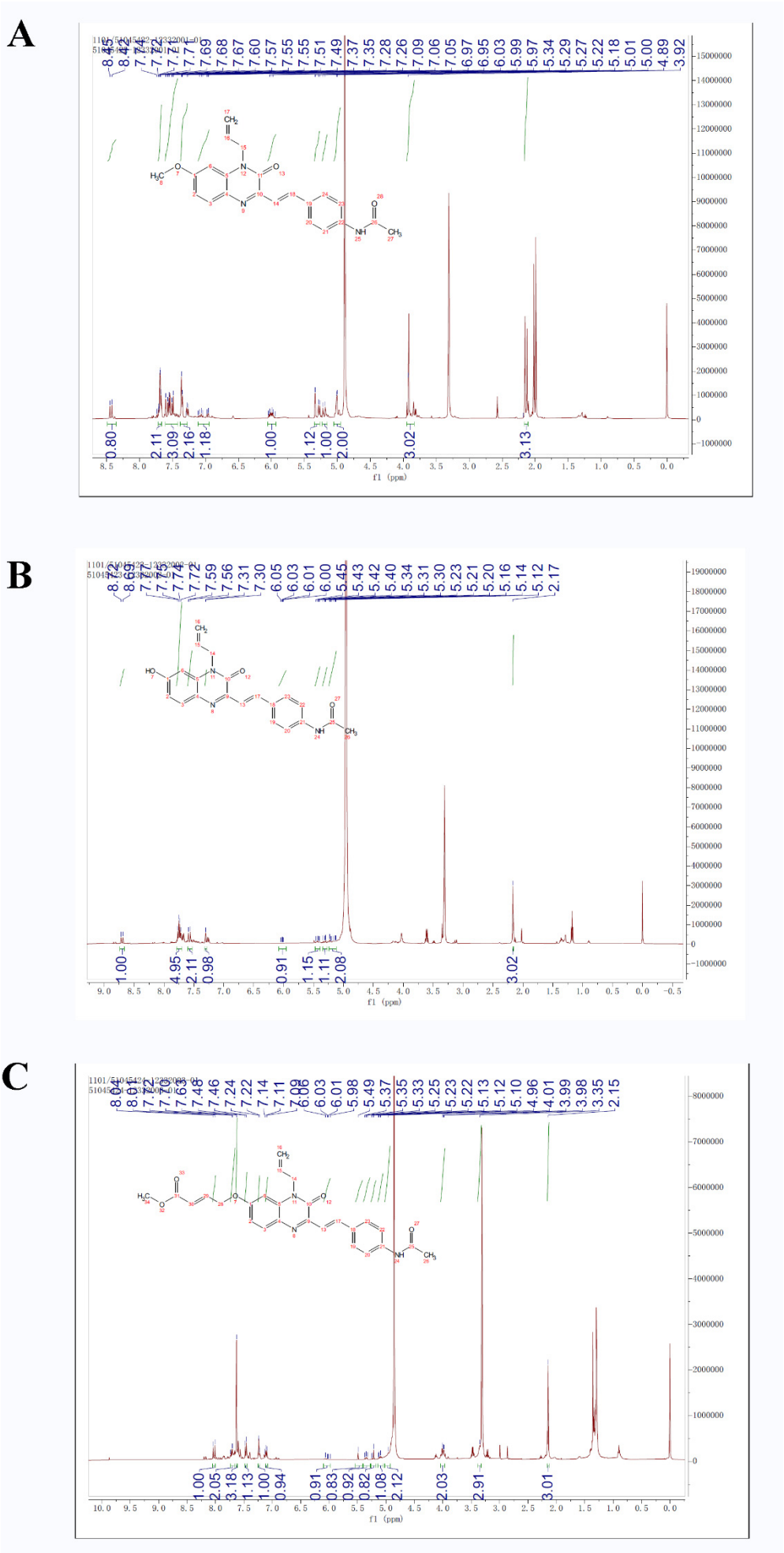
A
B
C
f1 (ppm)

Figure S1. [1]H NMR spectra of Compound 7(A), Compound 8(B) and Compound 9(C) **.**

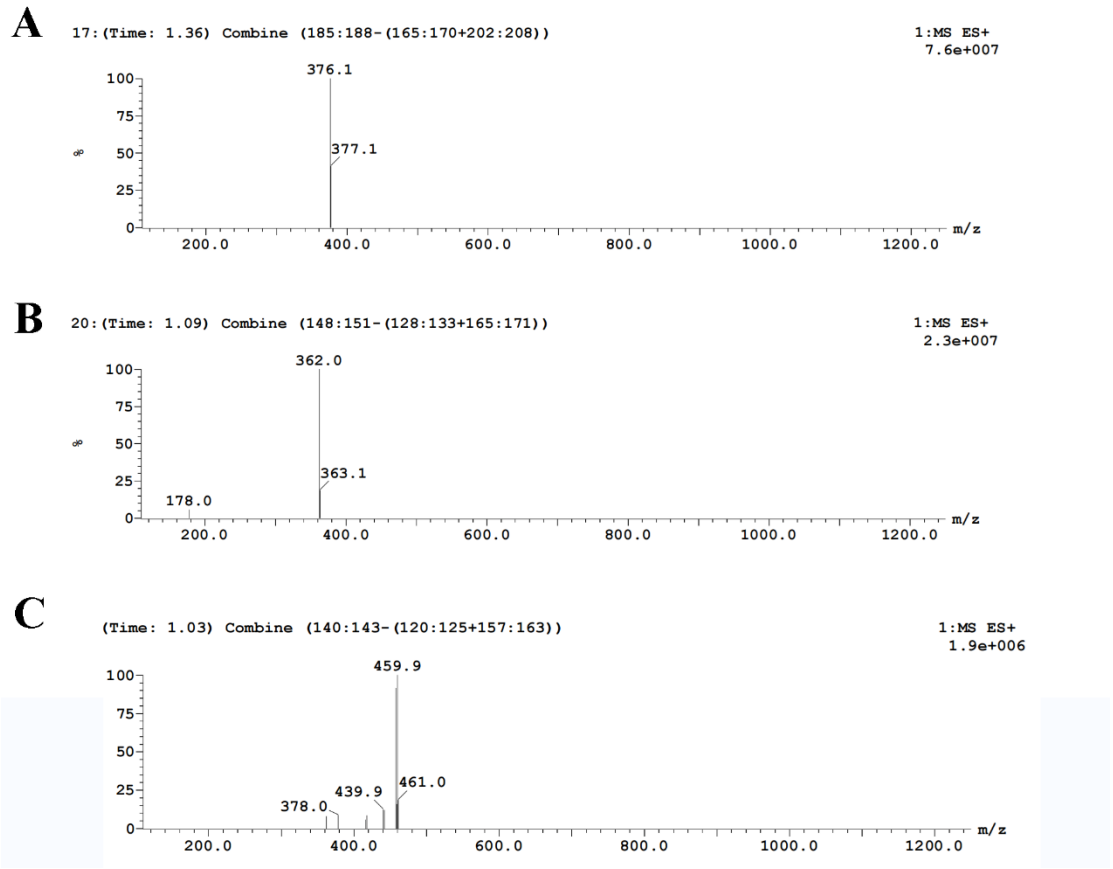

Figure S2. MS spectra of Compound 7(A), Compound 8(B) and Compound 9(C) **.**

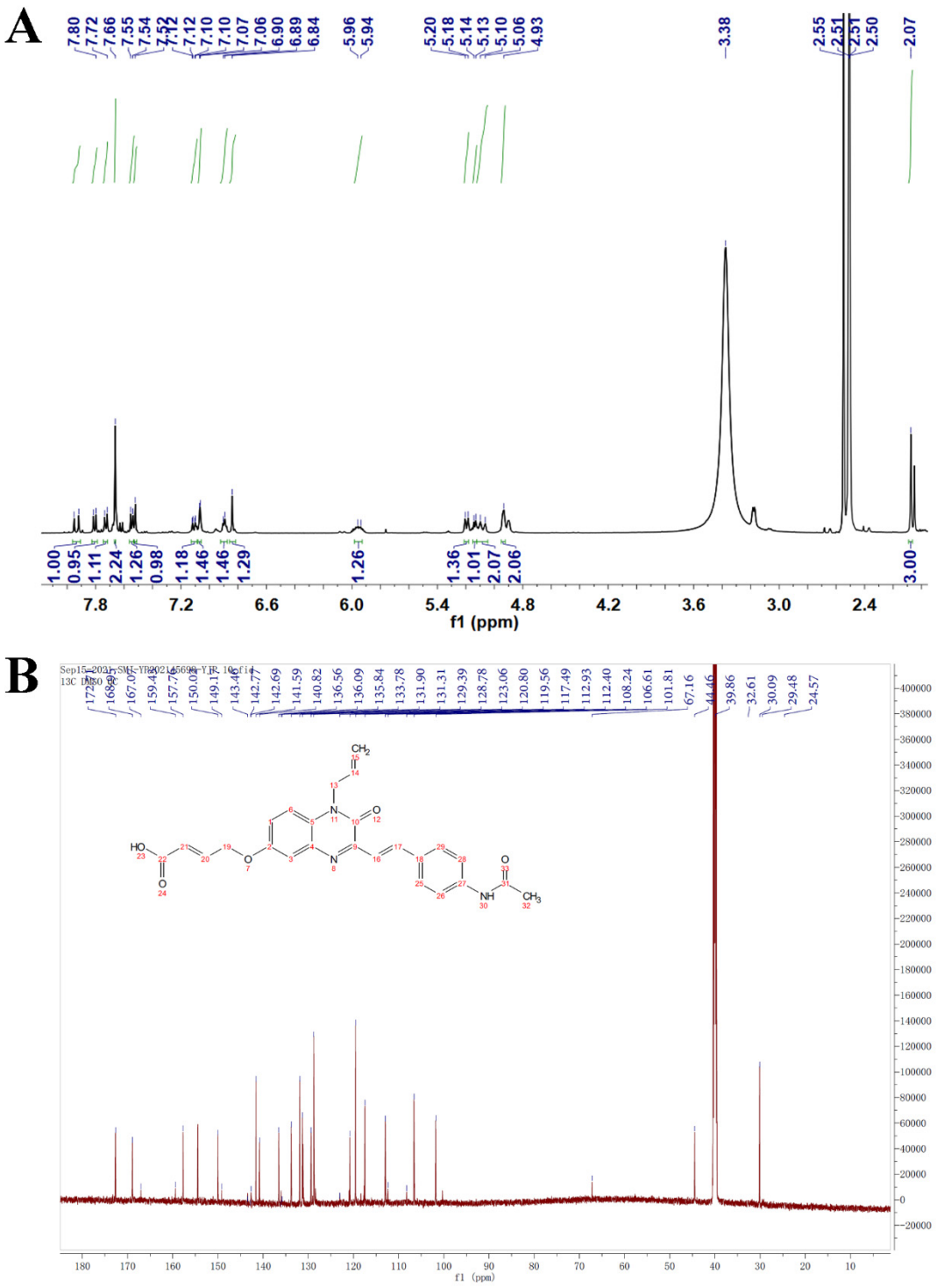

Figure S3. ^{1}H NMR spectra of QC (A). ^{13}C NMR spectra of QC (B).

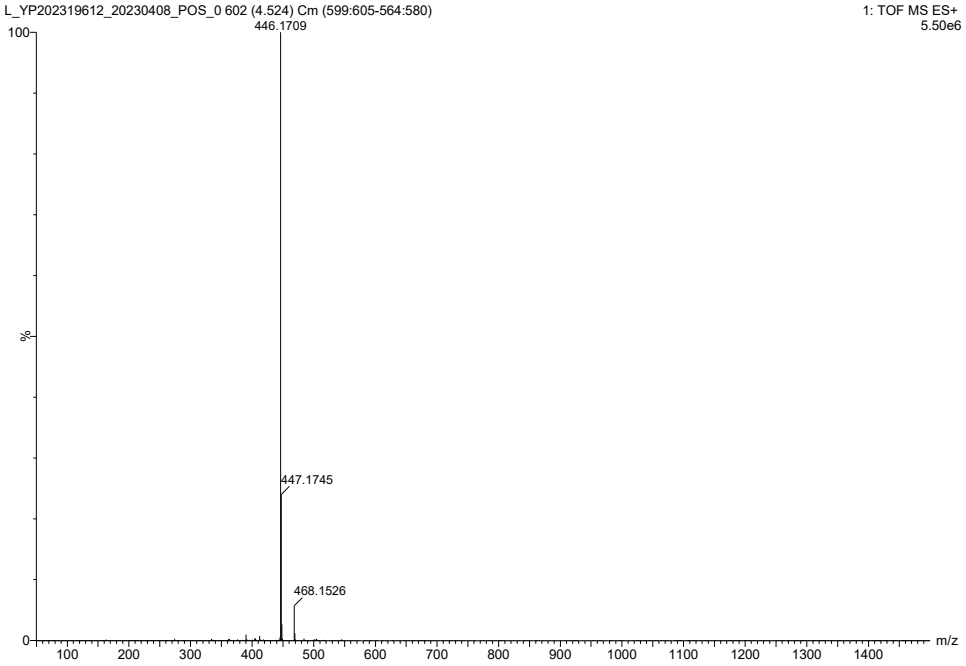

Figure S4. HRMS spectra of QC.

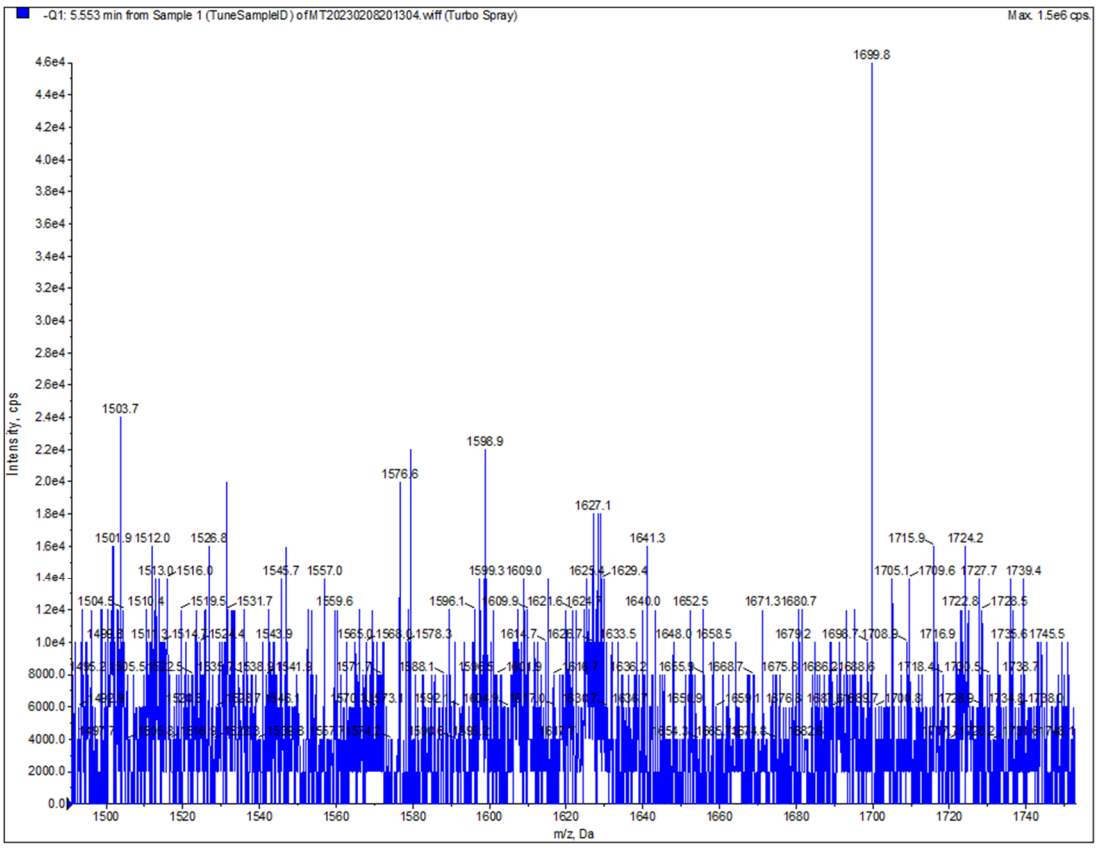

Figure S5. MS spectra of AC-QC nanoparticles.

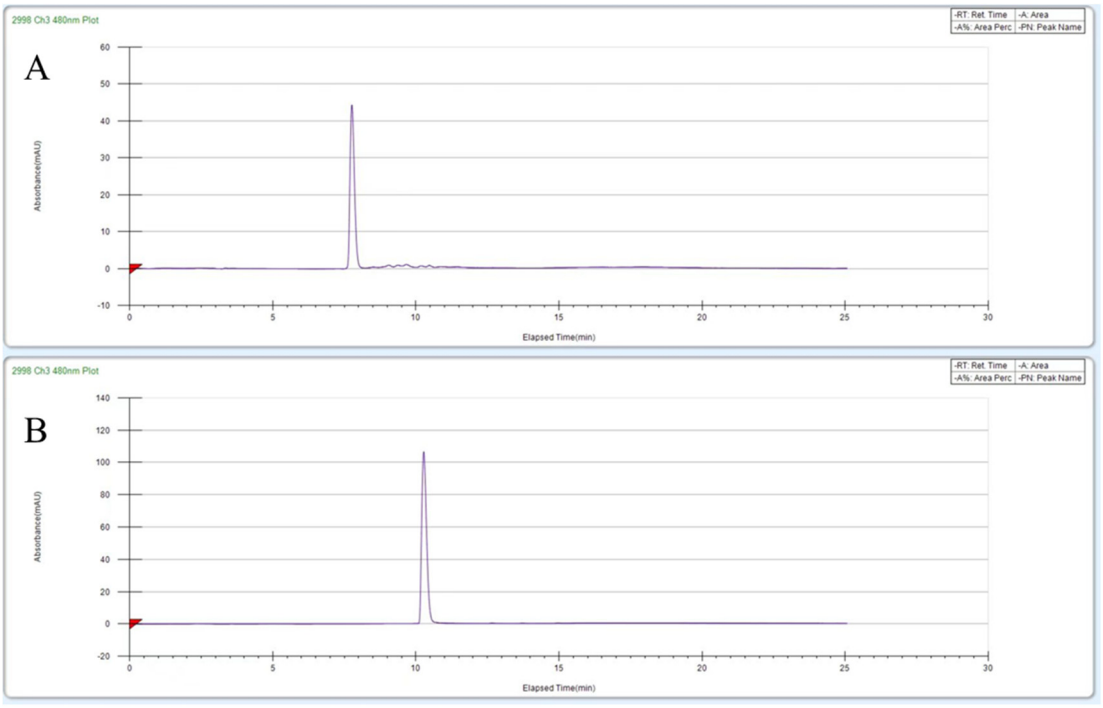

Figure S6. HPLC spectra of AC peptide (A) and AC-QC (B).

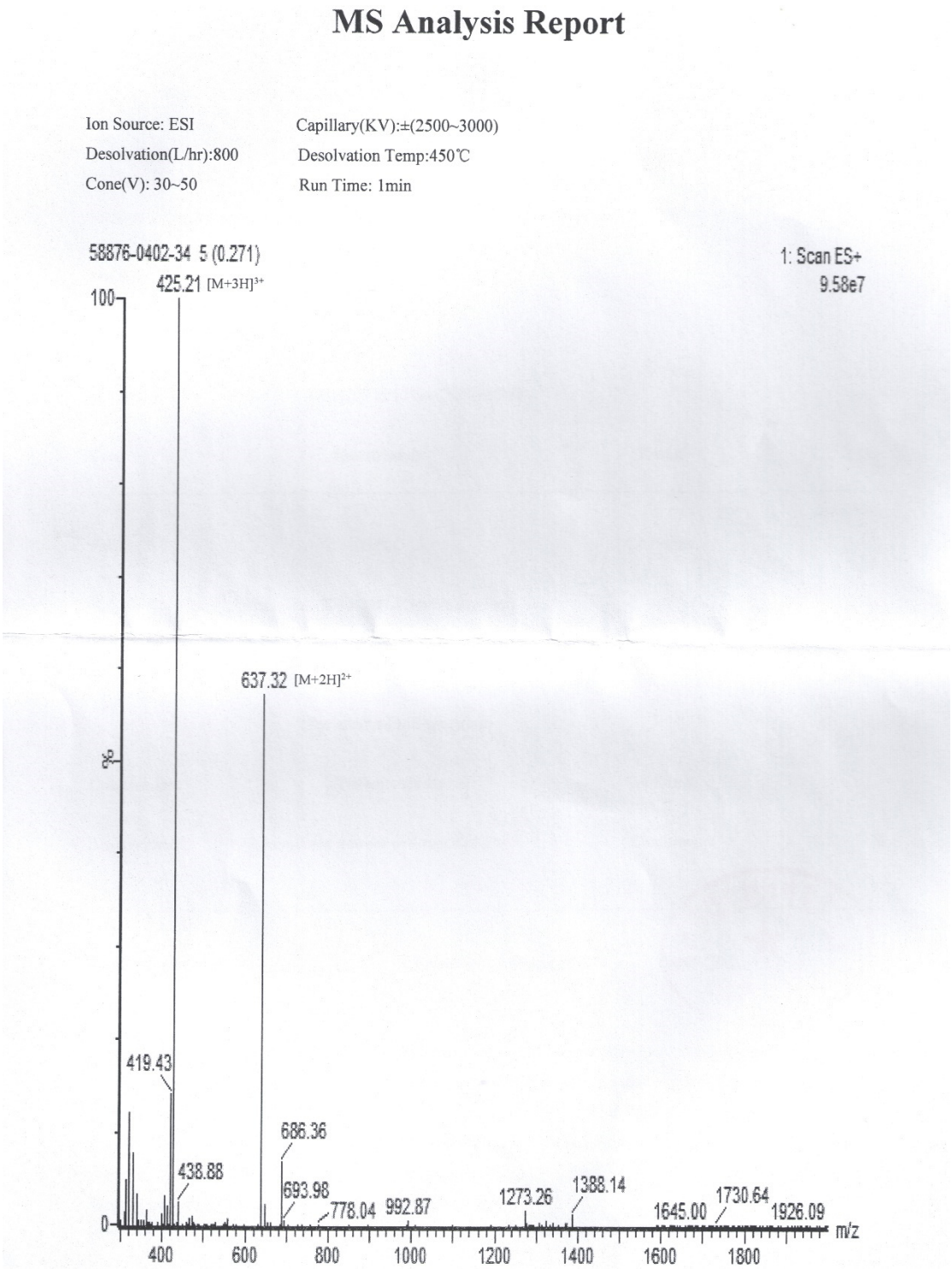

Figure S7. MS spectra of AC peptide.

Figure S8. QC fluorescence spectra in PBS solvents.

Figure S9. AC-QC fluorescence spectra in various solvents.

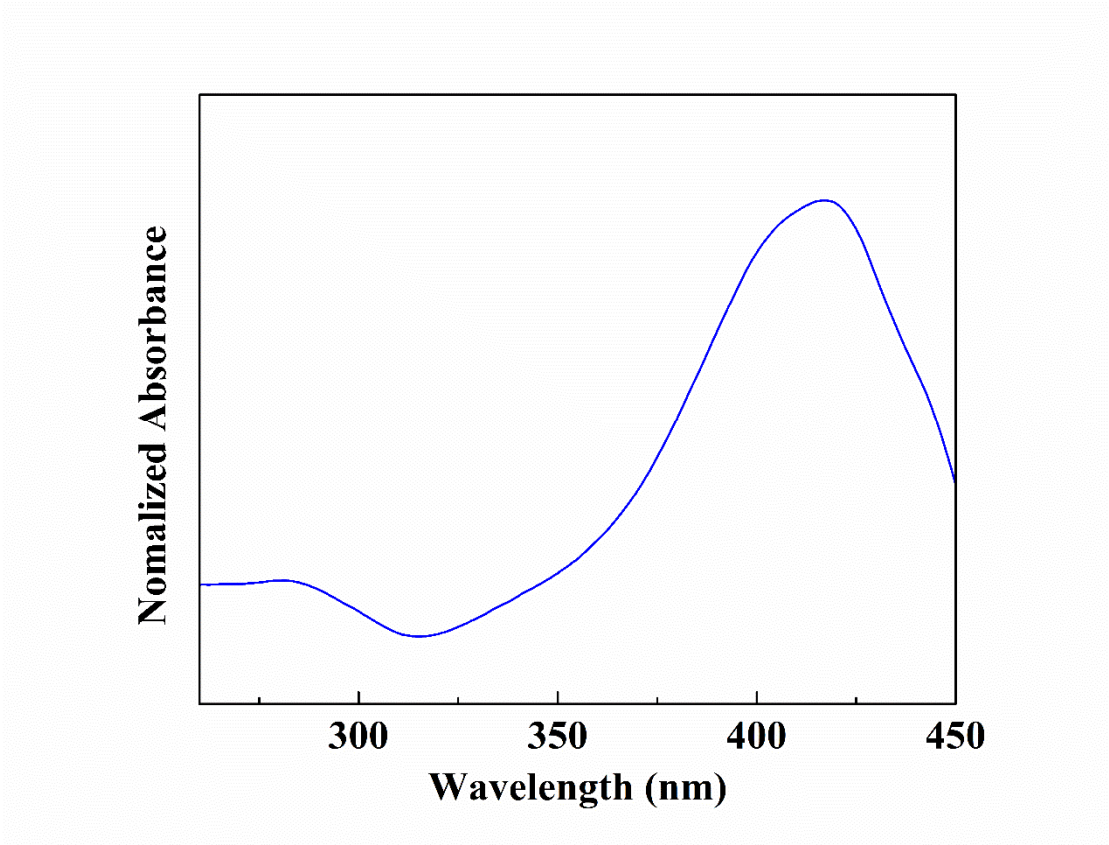

Figure S8 AC-QC conjugate of UV−vis absorption spectra in DMSO.

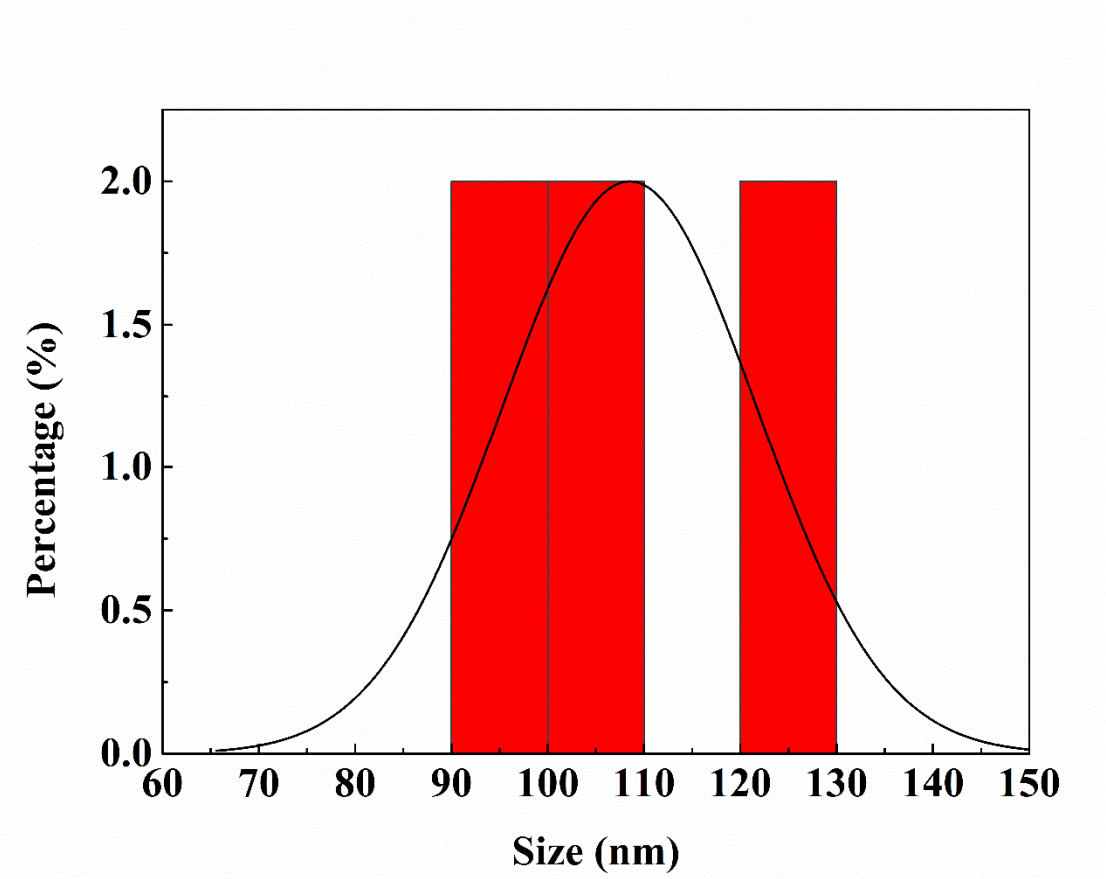

Figure S9. The size distribution of TEM.

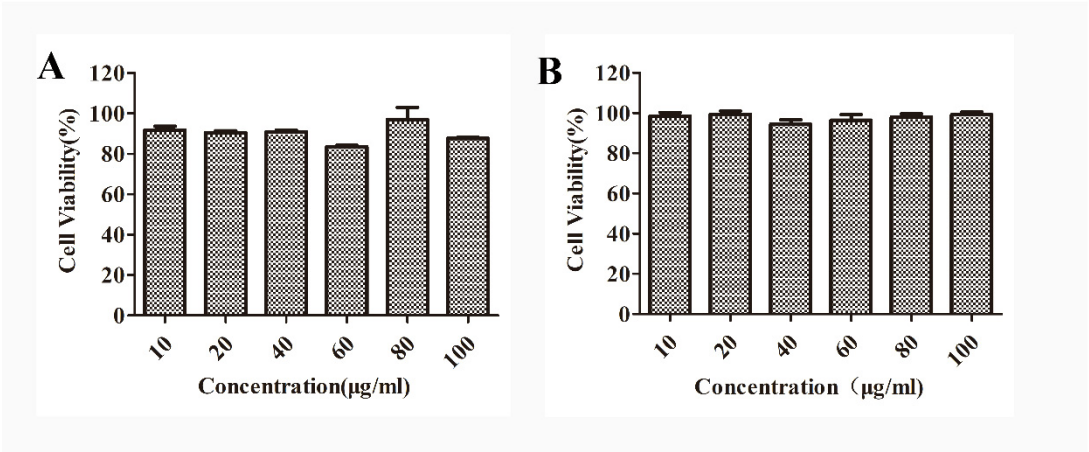

Figure S10. Relative cell viability of IOSE-80 cells (A) and L929 cells (B) against nanoparticle solution after cultured for 72 h with different nanoparticle concentrations.

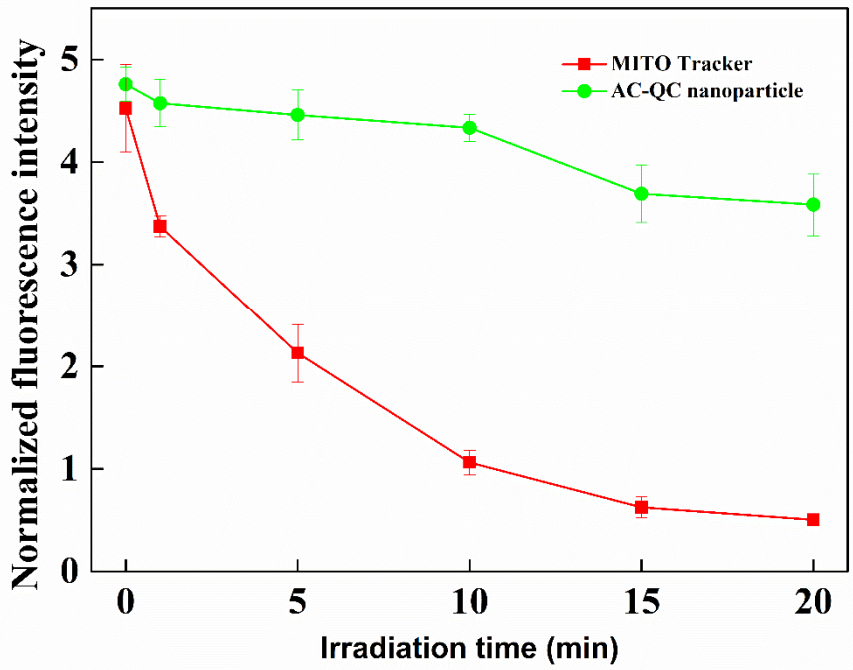

Figure S11. Time-dependent peak fluorescence intensity of MITO Tracker and AC-QC nanopatticle after 20 min irradiation. Data represent mean values ± standard deviation, n = 3, the statistical significance level is ***$p < 0.001$. All experiments were carried out three times independently.

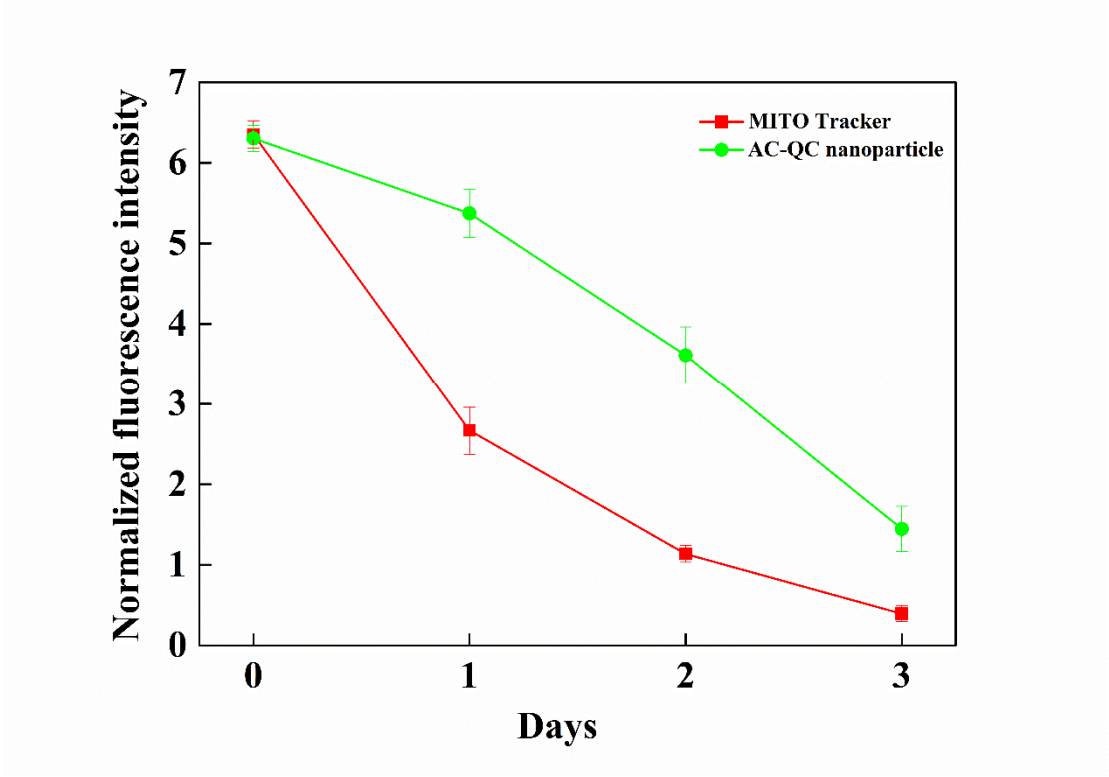

Figure S12. Long-term peak fluorescence intensity of MITO Tracker and AC-QC nanopatticle at 37 °C for 4 h and subculture for various time intervals from day 0 to day 3. Data represent mean values ± standard deviation, n = 3, the statistical significance level is ***p < 0.001.The experiment was carried out three times independently.