

Supporting Information

Poly(*N*-acryloyl ciprofloxacin-*co*-acrylic acid) grafted magnetite nanoparticles for microbial decontamination of collagen solution: Have we conquered the problem of antimicrobial residues?

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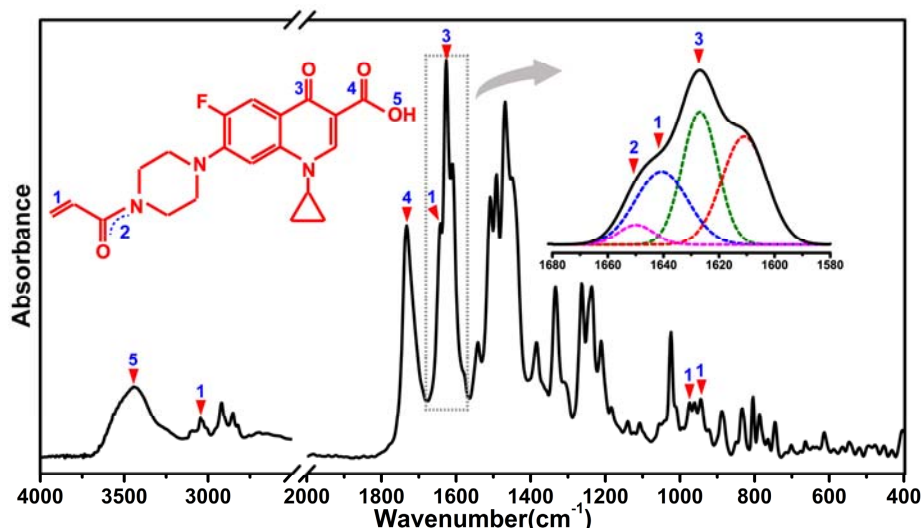


Figure S1. FTIR spectrum of *N*-acryloyl ciprofloxacin (NACPF) monomer. The absorption band peaking at 1639 cm⁻¹ corresponded to the symmetrical C=C stretch in vinyl groups. The peaks at 944 and 977 cm⁻¹ arose from the out-of-plane bend of vinyl hydrogens. The peak at 3044 cm⁻¹ was associated with the symmetric stretch of vinyl hydrogens. Also, deconvolution of the 1580-1680 cm⁻¹ region revealed the presence of a peak at 1651 cm⁻¹ for the stretching mode of tertiary amide, which was produced by reaction of the secondary amine in 7-piperazinyl in ciprofloxacin with acryloyl chloride.

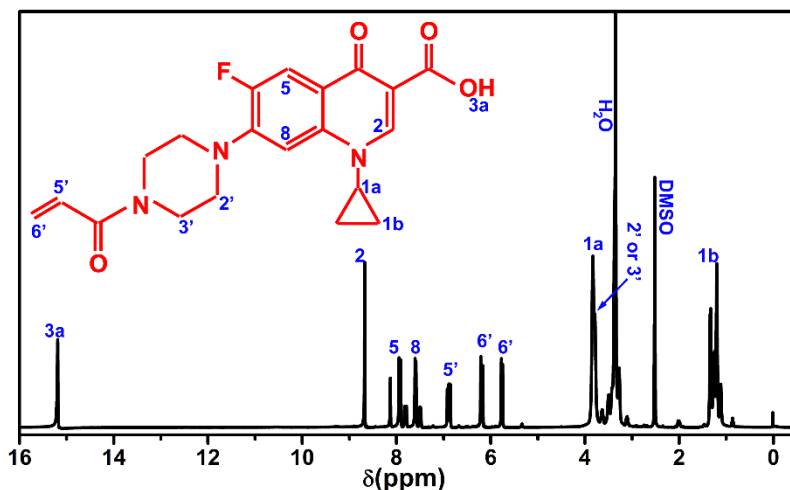


Figure S2. Assigned ¹H NMR spectrum of *N*-acryloyl ciprofloxacin (NACPF) monomer. A series of resonance signals at around 6.89 ppm, 6.19 ppm, and 5.76 ppm were observed, which could be ascribed to those protons in vinyl groups. ¹H NMR (400 MHz, DMSO-*d*₆) δ 15.19 (s, 1H, -COOH), 8.67 (s, 1H, CH), 7.92 (d, *J* = 13.1 Hz, 1H, CH), 7.59 (d, *J* = 7.3 Hz, 1H, CH), 6.89 (dd, *J* = 16.7, 10.4 Hz, 1H, CH₂), 6.19 (dd, *J* = 16.6, 2.4 Hz, 1H, CH₂), 5.76 (dd, *J* = 10.5, 2.4 Hz, 1H, CH₂), 3.82 (tt, *J* = 7.8 Hz, ³*J* = 4.2 Hz, 1H, CH), 3.76 (m, 2H, CH₂), 1.32 (dd, *J* = 7.5, 5.4 Hz, 2H, CH₂), 1.19 (m, 2H, CH₂).

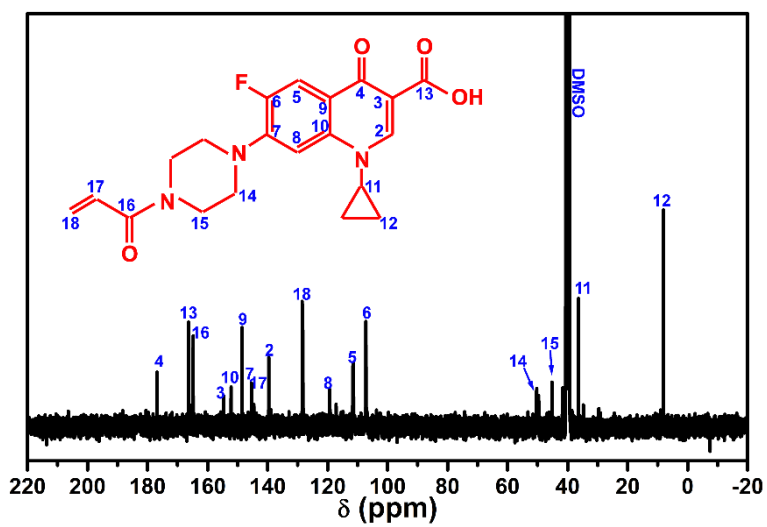


Figure S3. Assigned ¹³C NMR spectrum of *N*-acryloyl ciprofloxacin (NACPF) monomer. ¹³C NMR (101 MHz, DMSO-*d*₆) δ 176.81, 166.35, 164.81, 154.66, 152.17, 148.54, 145.38, 145.27, 139.59, 128.48, 119.36, 111.58, 107.23, 50.29, 45.17, 36.37, 8.07.

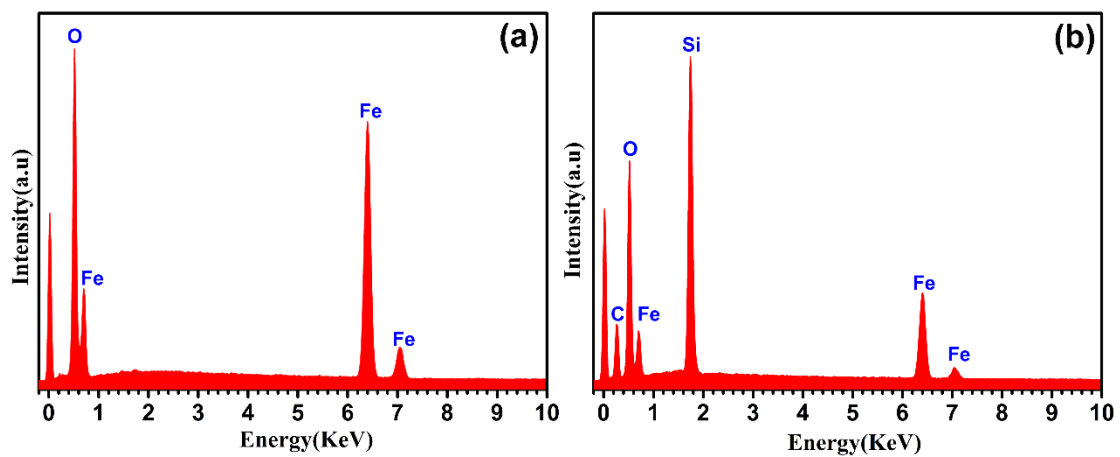


Figure S4. EDX spectra of (a) native Fe₃O₄ and (b) VTMOs@Fe₃O₄. Compared with native Fe₃O₄, Si and C elements were detected in VTMOs@Fe₃O₄, suggesting successful coupling of VTMOs to the surface of magnetite nanoparticles.