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# Supplementary Information

## Amphiphilic Cationic Copolymers with Ciprofloxacin: Preparation and Antimicrobial Activities

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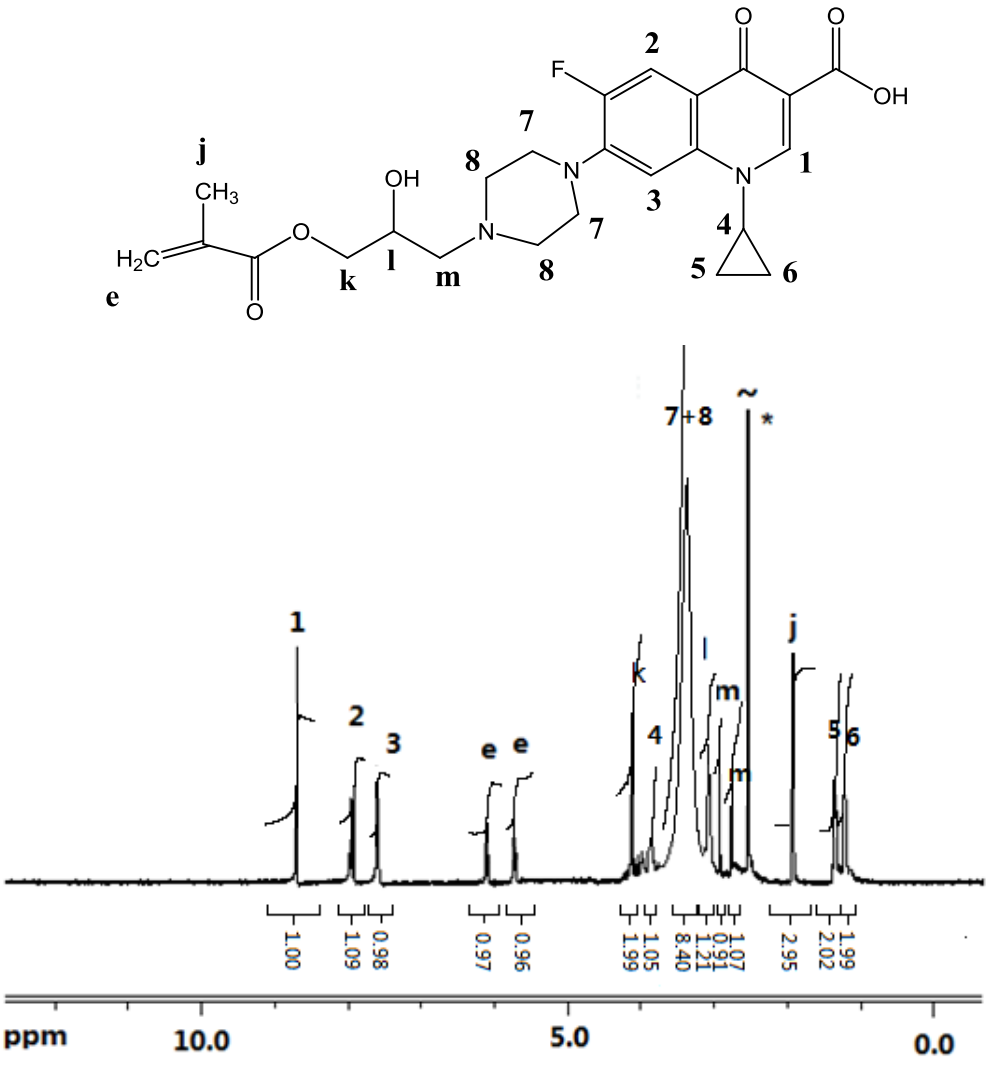



Figure S1. $^{1}$H-NMR spectrum of GMA-CPF in DMSO-$d_6$

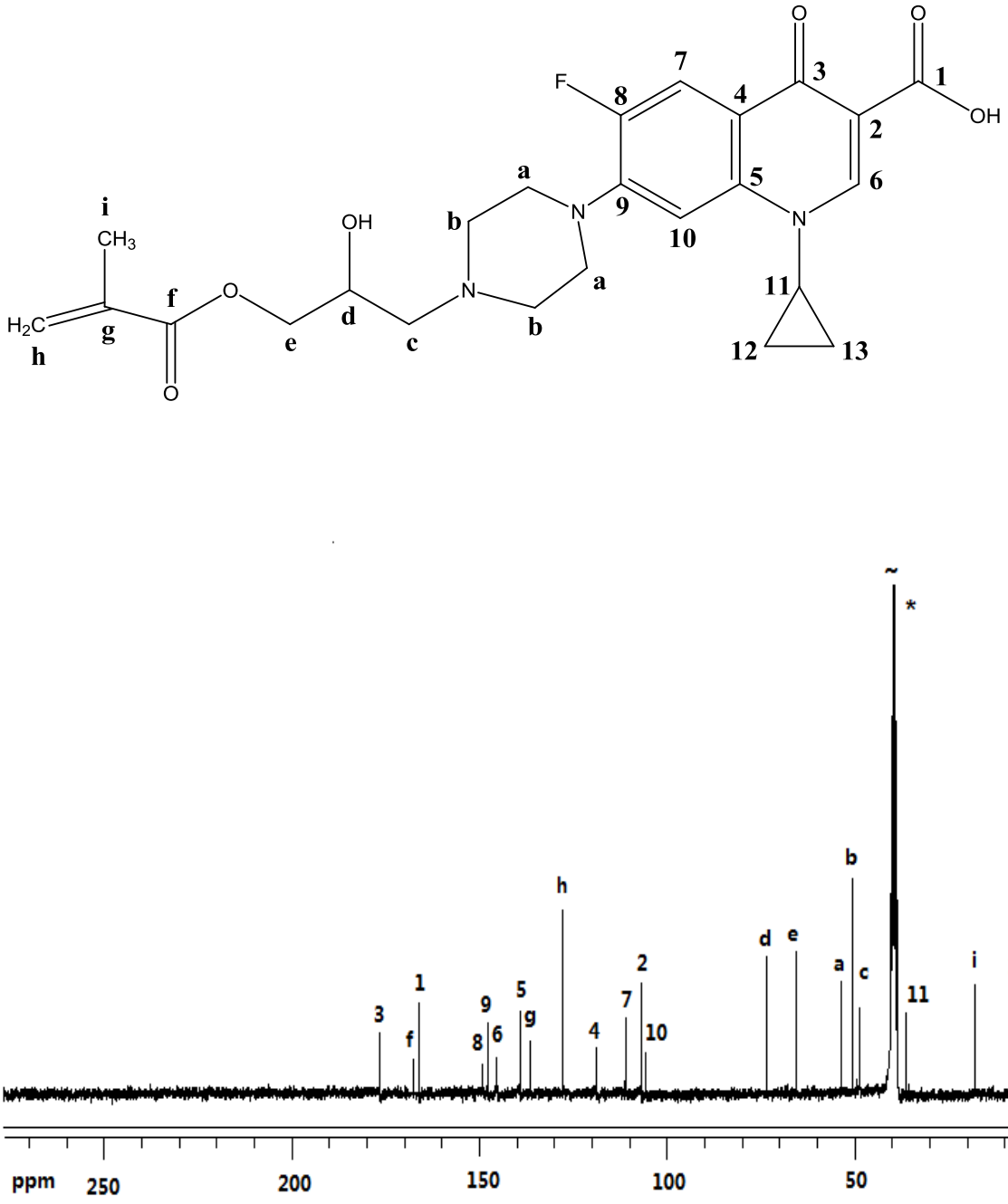
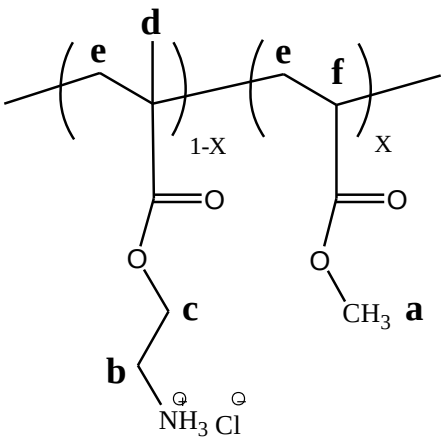



Figure S2. $^{13}$C-NMR spectrum of GMA-CPF



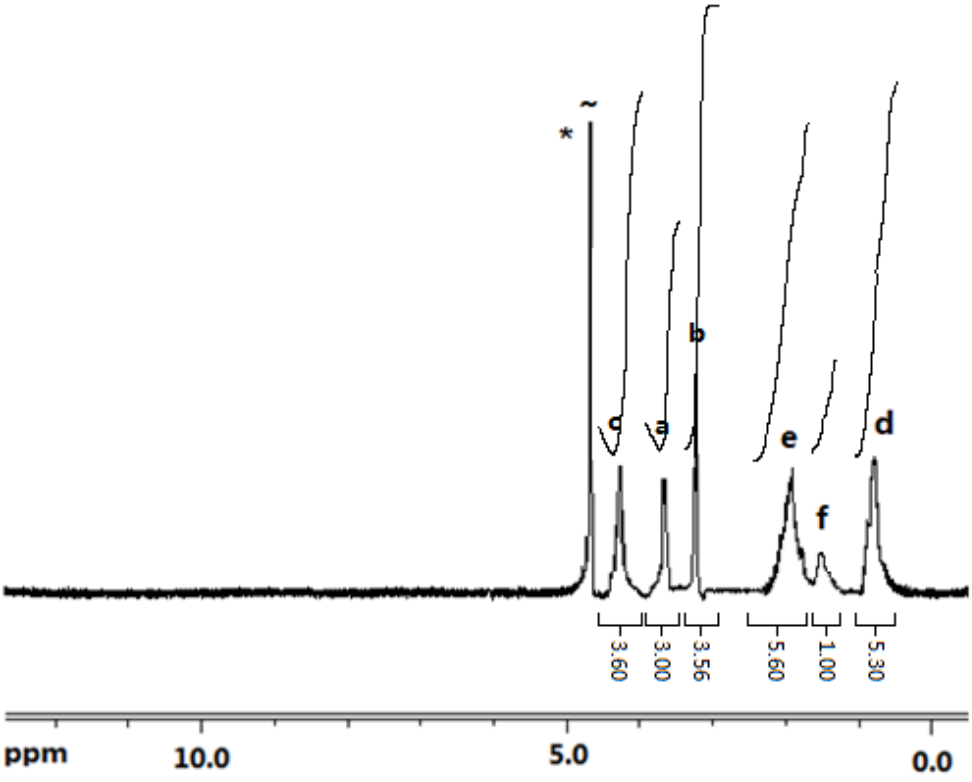




Figure S3. $^{1}$H-NMR spectrum of AEMAH/MA copolymer in DMSO-$d_6$; (1-x): x=64: 36

The copolymer compositions for this system were determined by $^{1}$H-NMR spectroscopy analysis. The $^{1}$H-NMR peak at 3.65 ppm (Figure S3, a) corresponds to the methyl group of MA side chain; the peak at 3.27 ppm (Figure S3, b) corresponds to the methylene group, -O-$CH_2$-C**$H_2$**-$NH_3^+Cl^-$, in the AEMAH side chain. Let $m_1$ be the mole fraction of AEMAH and $m_2$ = (1-$m_1$) that of the MA unit.

$$\frac{Area_{3.65ppm}}{Area_{3.27ppm}} = \frac{3m_2}{2m_1} = C_1 \qquad \text{Equation 1a}$$

Where $Area_{3.65ppm}$=area of the peak at 3.65ppm and $Area_{3.27ppm}$=area of the peak at 3.27ppm.

On simplification,

$$m_1 = \frac{3}{2C_1+3} \qquad \text{Equation 1b}$$

Where $m_1$ and $m_2$ are the copolymer molar compositions. The results are presented in Table 1, which are in agreement with the values calculated by apparent charge density.

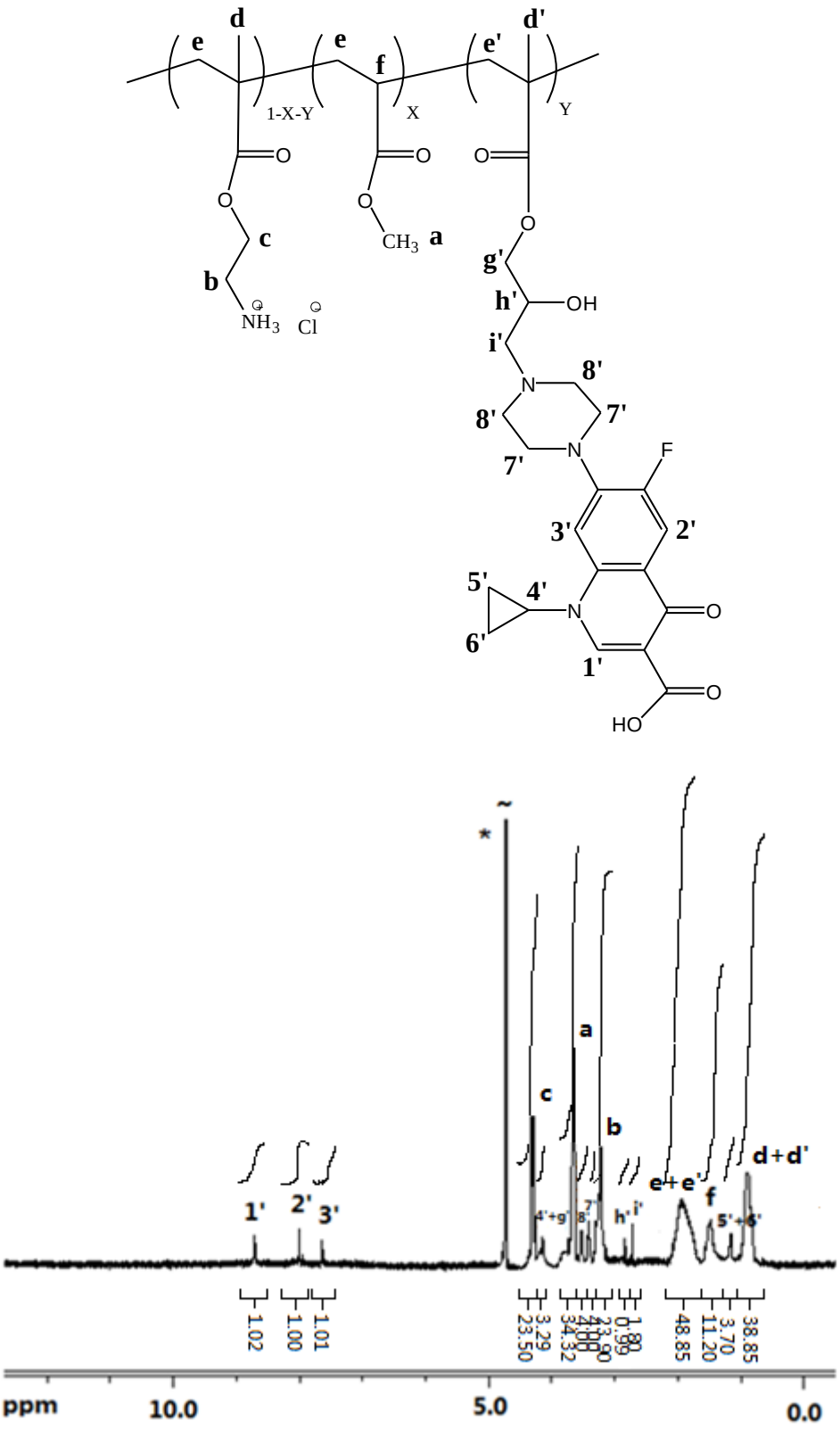



Figure S4. $^{1}$H-NMR spectrum of AEMAH/MA/GMA-CPF copolymer in DMSO-$d_6$; (1-x-y): x: y=49: 46.9: 4.1

The copolymer compositions for this system were determined by $^{1}$H-NMR

spectroscopy analysis. The $^{1}$H-NMR peak at 3.65 ppm (Figure S4, a) corresponds to the methyl group of MA side chain; the peak at 3.27 ppm (Figure S4, b) corresponds to the methylene group, -O-$CH_2$-C**$H_2$**-$NH_3^+Cl^-$, in the AEMAH side chain; the peaks at 0.81 ppm (Figure S4, d+d') are the methyl group for AEMAH and GMA-CPF. Considering the mole fraction of AEMAH as $m_1$, the mole fraction of MA as $m_2$, and $m_3 = (1-m_1-m_2)$ that of the GMA-CPF unit.

$$\frac{Area_{3.65ppm}}{Area_{3.27ppm}} = \frac{3m_2}{2m_1} = C_1 \qquad \text{Equation 2a}$$

$$\frac{Area_{3.27ppm}}{Area_{0.81ppm}} = \frac{2m_1}{3m_1+3m_3} = C_2 \qquad \text{Equation 2b}$$

Where $Area_{3.65ppm}$=area of the peak at 3.65ppm, $Area_{3.27ppm}$=area of the peak at 3.27ppm, and $Area_{0.81ppm}$=area of the peak at 0.81ppm.

On simplification,

$$m_1 = \frac{3C_2}{2C_1C_2+2} \qquad \text{Equation 2c}$$

$$m_2 = \frac{C_1C_2}{C_1C_2+1} \qquad \text{Equation 2d}$$

$$m_3 = \frac{2-3C_2}{2C_1C_2+2} \qquad \text{Equation 2e}$$

Where $m_1$, $m_2$, and $m_3$ are the copolymer molar compositions. The results are presented in Table 1, which are in agreement with the values calculated by apparent charge density and UV measurements.