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Supporting Information

Synthesis, Characterization and Antimicrobial Activities of Water-Soluble Amphiphilic Copolymers Containing Ciprofloxacin and Quaternary Ammonium Salts

Man He,[a,b] Huining Xiao,*[a] Yuming Zhou[b] and Peng Lu[a]

[a] Department of Chemical Engineering & Limerick Pulp and Paper Centre, University of New Brunswick, Fredericton, NB E3B 5A3, Canada

[b] School of Chemistry and Chemical Engineering, Southeast University, Nanjing 211189, China

Correspondence to: H. Xiao (E-mail: hxiao@unb.ca)

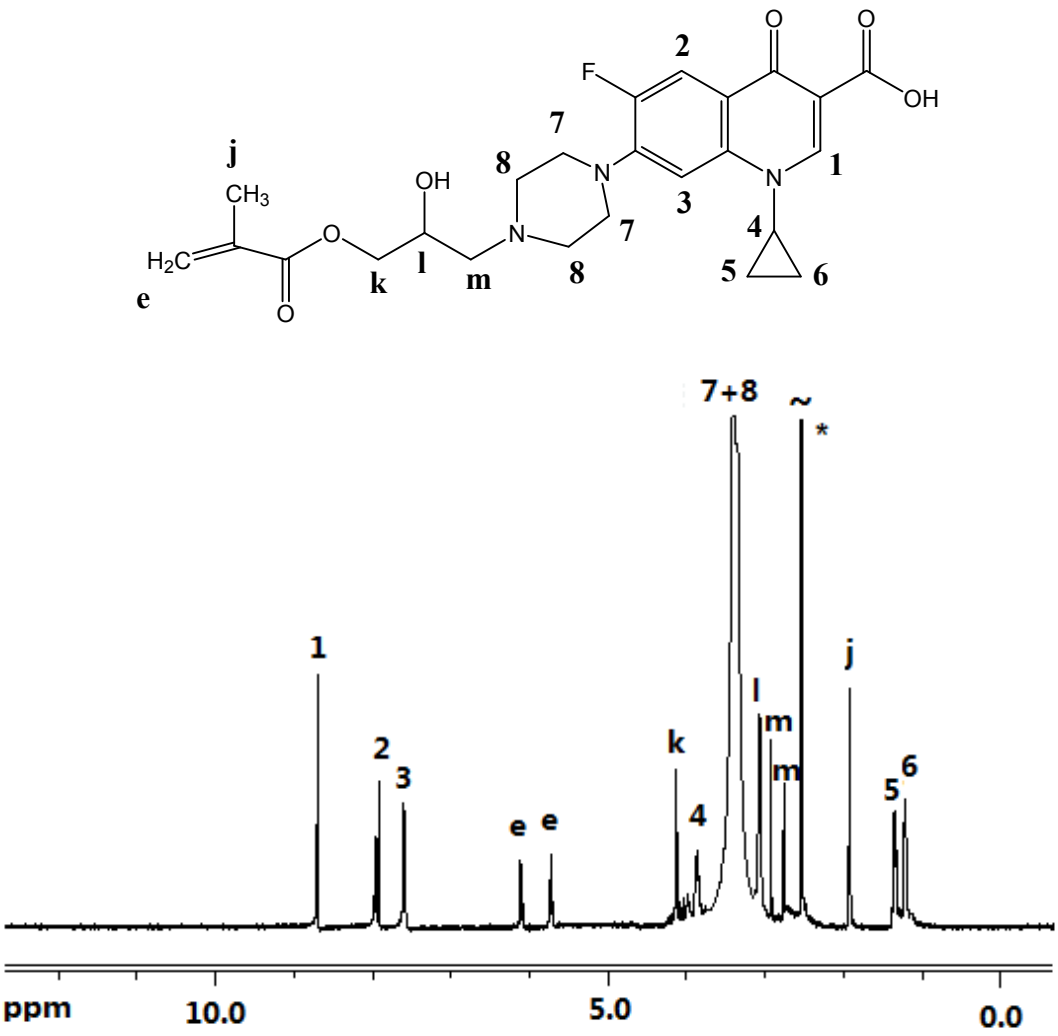


Figure S1. ^{1}H-NMR spectrum of GMA-CPF

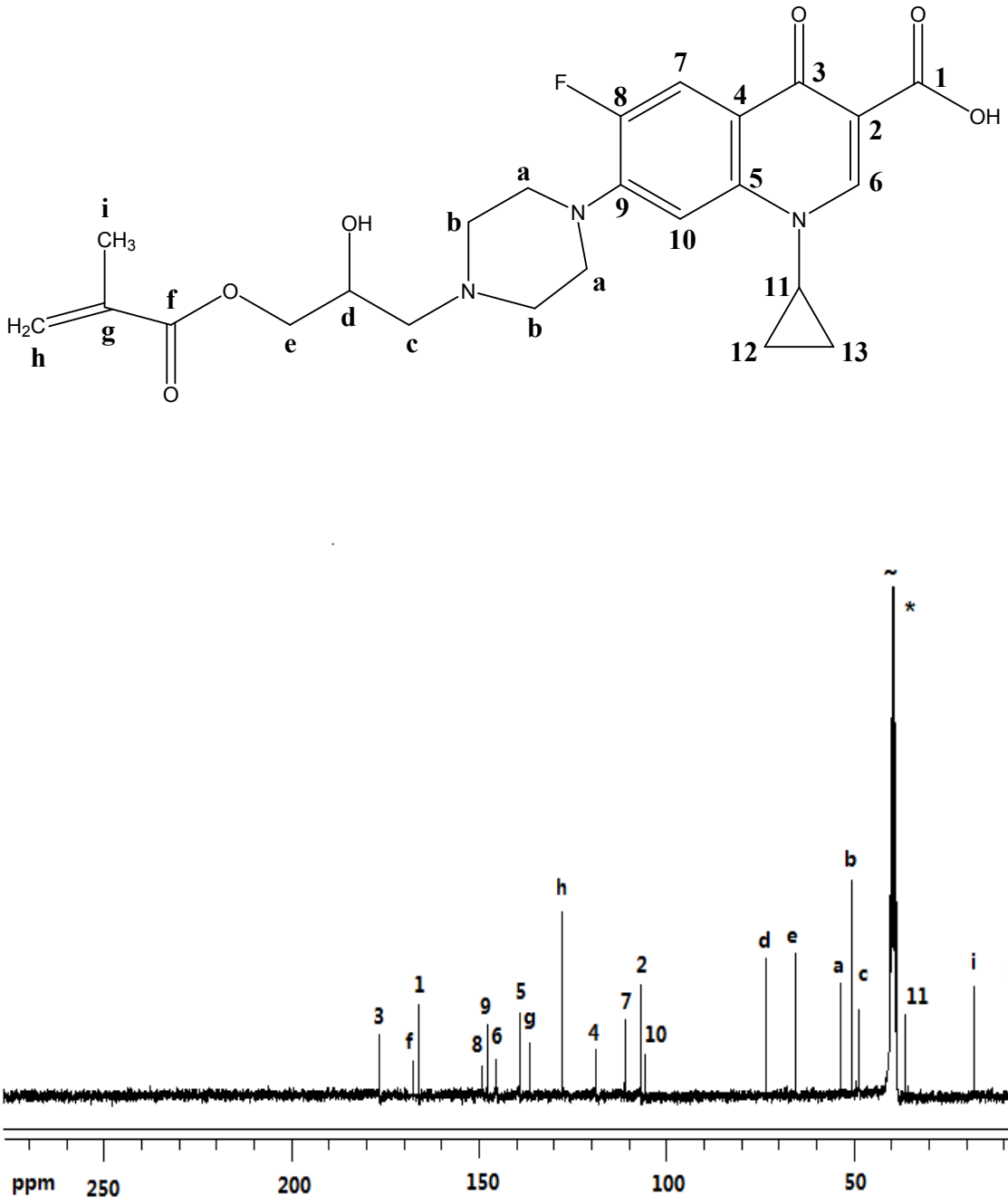


Figure S2. ^{13}C-NMR spectrum of GMA-CPF

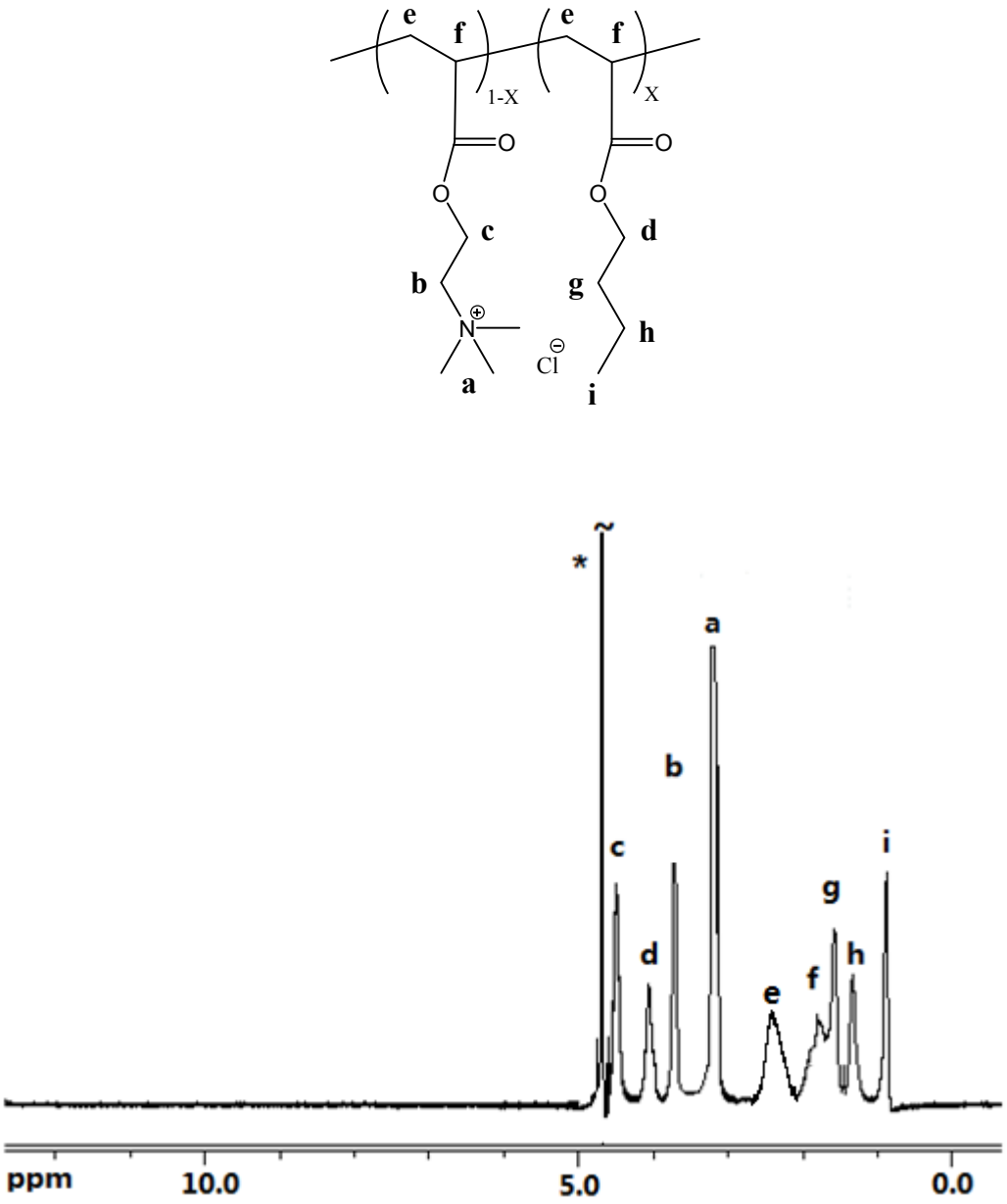


Figure S3. ^{1}H-NMR spectrum of DMAEAMC/BA copolymer; (1-x): x=59: 41

The copolymer compositions for this system were determined by ^{1}H-NMR spectroscopy analysis. The ^{1}H-NMR peak at 3.10 ppm (Figure S3, a) corresponds to the methyl group of DMAEAMC; the peak at 1.32 ppm (Figure S3, h) corresponds to the methylene group, -O-$(CH_2)_2C\mathbf{H_2}CH_3$, in the BA side chain. Let m_1 be the mole fraction of DMAEAMC and $m_2 = (1-m_1)$ that of the BA unit.

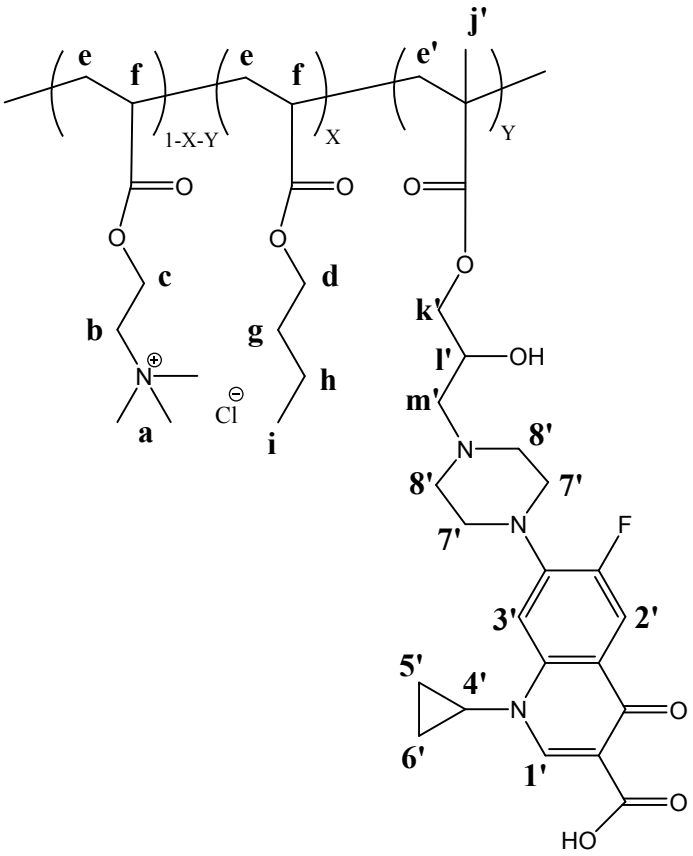
$$\frac{Area_{3.10ppm}}{Area_{1.32ppm}} = \frac{9m_1}{2m_2} = C_1 \qquad \text{Equation 1a}$$

Where $Area_{3.10ppm}$=area of the peak at 3.10ppm and $Area_{1.32ppm}$=area of the peak at 1.32ppm.

On simplification,

$$m_1 = \frac{2C_1}{2C_1 + 9} \qquad \text{Equation 1b}$$

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.



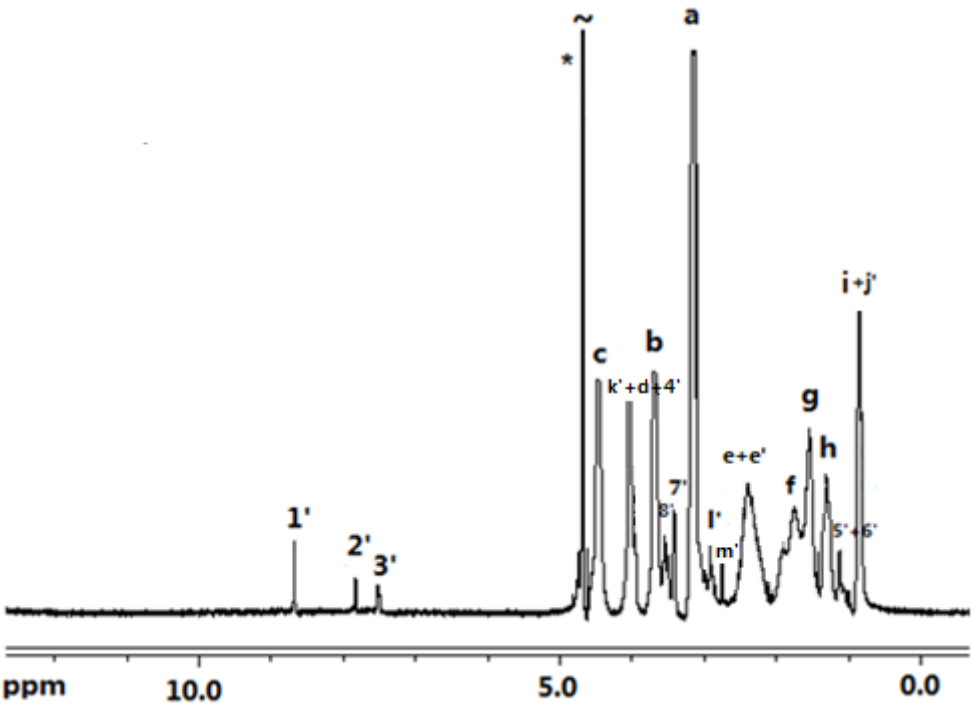


Figure S4. ^{1}H-NMR spectrum of DMAEAMC/BA/GMA-CPF copolymer; (1-x-y): x: y=52.8: 42.9: 4.3

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

spectroscopy analysis. The ^{1}H-NMR peak at 3.10 ppm (Figure S4, a) corresponds to the methyl group of DMAEAMC; the peak at 1.32 ppm (Figure S4, h) corresponds to the methylene group, -O-$(CH_2)_2C\mathbf{H_2}CH_3$, in the BA side chain; the peaks at 0.85 ppm (Figure S4, i+j') are the methyl group for BA and GMA-CPF. Considering the mole fraction of DMAEAMC as m_1, the mole fraction of BA as m_2, and $m_3 = (1-m_1-m_2)$ that of the GMA-CPF unit.

$$\frac{Area_{3.10ppm}}{Area_{1.32ppm}} = \frac{9m_1}{2m_2} = C_1 \qquad \text{Equation 2a}$$

$$\frac{Area_{1.32ppm}}{Area_{0.85ppm}} = \frac{2m_2}{3m_2 + 3m_3} = C_2 \qquad \text{Equation 2b}$$

Where $Area_{3.10ppm}$=area of the peak at 3.10ppm, $Area_{1.32ppm}$=area of the peak at 1.32ppm, and $Area_{0.85ppm}$=area of the peak at 0.85ppm.

On simplification,

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

$$m_2 = \frac{9C_1}{2C_1C_2 + 6} \qquad \text{Equation 2d}$$

$$m_3 = \frac{6 - 9C_1}{2C_1C_2 + 6} \qquad \text{Equation 2e}$$

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.