Determination of the degree of hydrolysis of DMAEMA during its RAFT polymerization in water

By ^{1}H-NMR it was possible to study the extent of DMAEMA hydrolysis during its RAFT polymerization in water at pH 7 (Figure S1). This was monitored by the appearance of the signals at δ = 5.62 ppm (e) and δ = 5.31 ppm (f) from the vinyl protons in MAA and two methylenes (–CH_2) from the formed ethanolamine at δ = 3.86 ppm (g) and δ = 3.26 ppm (h). The chemical shifts for the –CH_2 protons in both the monomer, DMAEMA and the polymer, PDMAEMA are known, located at δ = 4.49 (c) and 3.52 ppm (d) for DMAEMA and at δ = 4.36 and 3.36 ppm in PDMAEMA. The signals at δ = 3.52 ppm (d) consists of a triplet and a singlet from –CH_2 from both monomer and polymer. Hence, the degree of hydrolysis (DH) of DMAEMA can be determined from the amount of hydrolyzed DMAEMA ($I_{3.26}$) and the total initial amount of DMAEMA ($I_{3.26}$+$I_{3.52}$) (equation S1 and Figure S2).

$$DH(\%) = \frac{I_{3.26}}{I_{3.26} + I_{3.52}} \times 100 \qquad \text{(S1)}$$

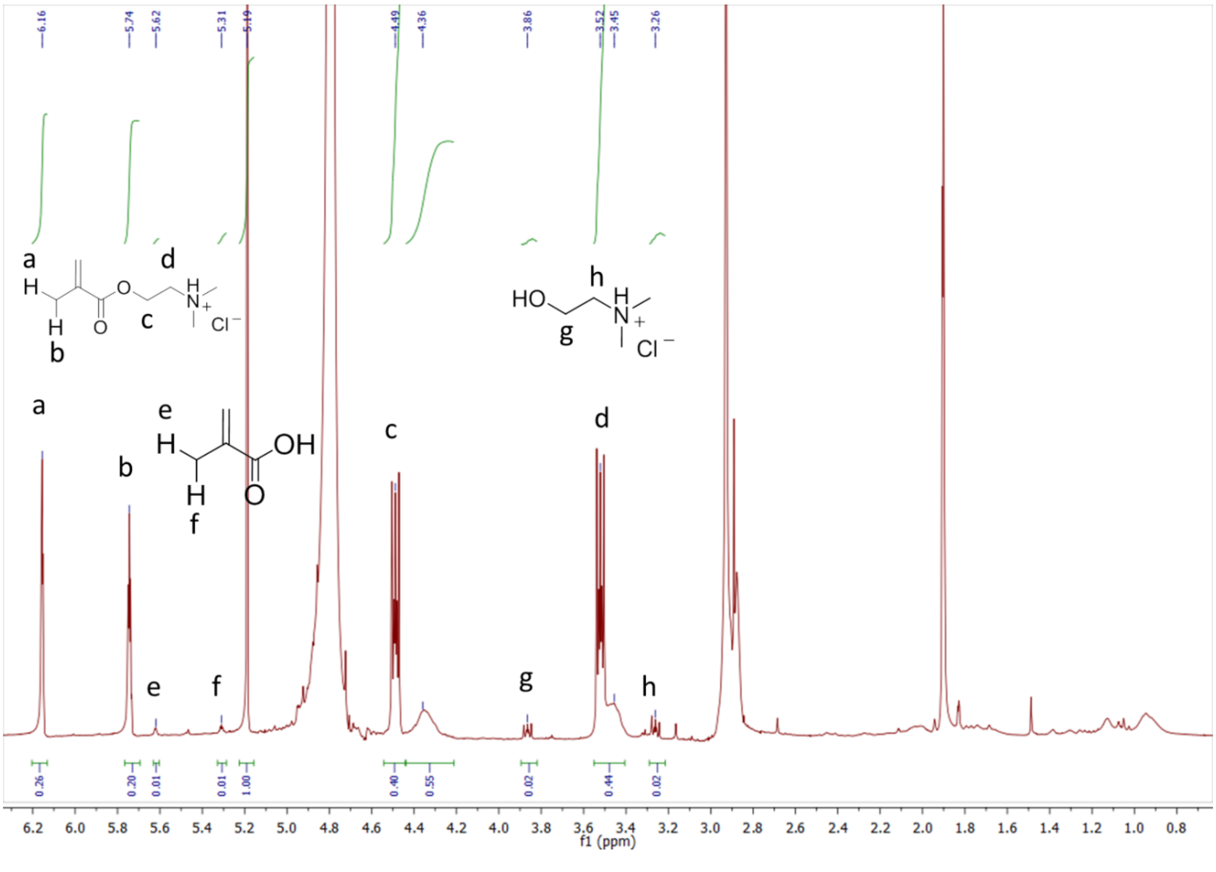
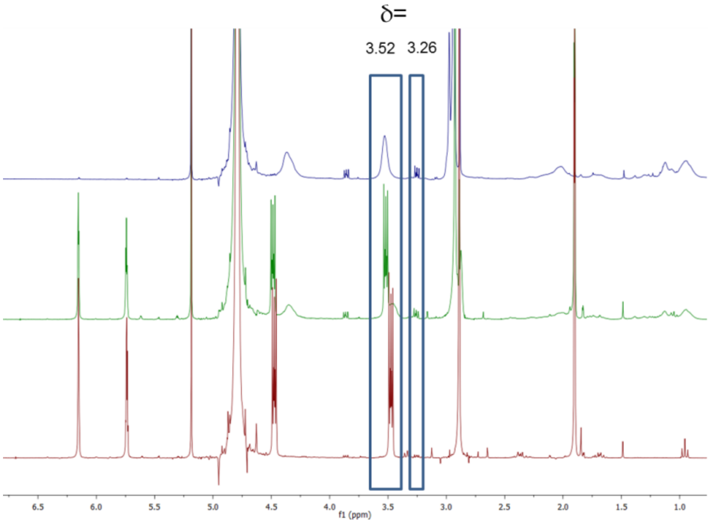


Figure S1. NMR spectrum during synthesis (t = 20 min) of the macroRAFT, P(DMAEMA-*co*-MAA), in D_2O. 1,3,5-trioxane was used as an internal reference and the integral was set to 1.



t (min)	$I_{3.26}$	$I_{3.52}$	MAA/PMAA formed (%)
130	0.20	2.55	7.2
20	0.02	0.44	4.3
0	0.05	2.24	2.2

Figure S2. ^{1}H NMR spectra during synthesis (t = 0, 20 and 130 min) of the macroRAFT, P(DMAEMA-*co*-MAA), in D_2O. 1,3,5- trioxane was used as an internal reference and the integral was set to 1.

Determination of the molar mass of P(DMAEMA-*co*-MAA) by MALDI-ToF

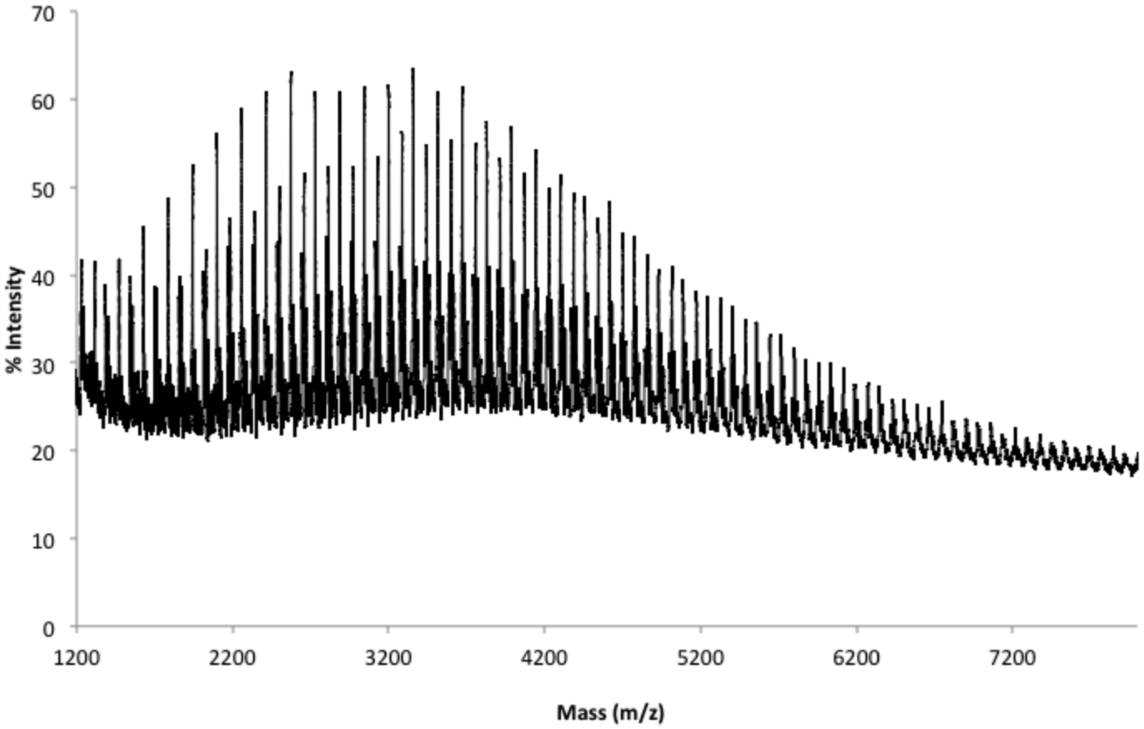


Figure S3. MALDI-ToF spectrum of P(DMAEMA-*co*-MAA) after purification.

Determination of the glass transition temperatures of P(DMAEMA-*co*-MAA) and Latex 1 – 4 by DSC

Table S1. Glass transition temperature of the macroRAFT P(DMAEMA-*co*-MAA) and Latex 1-4 determined by DSC.

Entry	**T_g (°C)**
macroRAFT	107.7
Latex 1	115.5
Latex 2	116.4
Latex 3	119.3
Latex 4	121.4

Adsorption measurements of Latex 1 – 4 in the QCM-D

The adsorption measurements in the QCM-D were performed at continuous flow, 0.15 ml min^{-1}. First, a stable baseline with Milli-Q water was obtained.

$t_0 - t_1$ Milli-Q water

$t_1 - t_2$ Latex dispersion (100 mg L^{-1})

$t_2 - t_3$ Milli-Q water

Table S2. Time intervals for adsorption measurements performed in the QCM-D.

time (min)	Latex 1	Latex 2	Latex 3	Latex 4
$t_0 - t_1$	0 - 3	0 - 3	0 - 3	0 - 3
$t_1 - t_2$	3 - 32	3 - 27	3 - 24	3 - 60
$t_2 - t_3$	32 - 40	27 - 67	24 - 32	60 - 70