

Supplementary material:

NMR spectra:

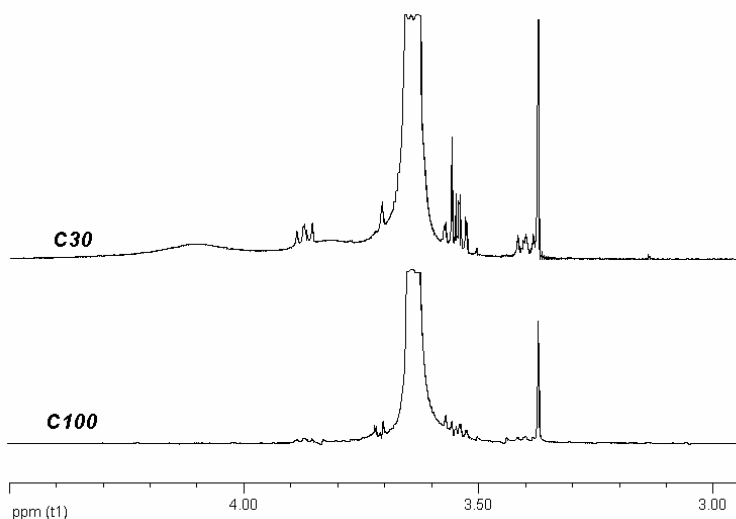


Fig. 1. Fragment of ^1H NMR spectra of the polymers C100 and C30 in CDCl_3

Peak assignments:

At 3.33 - 3.38 ppm is a signal of $-\text{OCH}_3$ group of PEOMEMA;

At 3.56 - 3.64 ppm is a broad signal of $-\text{CH}_2-\text{CH}_2-\text{O}-$ groups of PEOMEMA;

At 4.10 and 3.83 ppm are the signals of $-\text{CH}_2-\text{OH}$ group of HEMA and $-\text{CH}_2-\text{OCO}$ group. These signals are badly resolved and enhanced by traces of water absorbed by the polymer sample.

The signal of $-\text{CH}_2-\text{OH}$ group of HEMA is partly overlapped with the signal of $-\text{CH}_2-\text{CH}_2-\text{O}-$ groups of PEOMEMA.

The signals at 0.96 ppm of $-\text{CH}_3$ groups and at 2.00 ppm of $-\text{CH}_2-$ groups of the main chain (not shown) are not informative since they belong to both HEMA and PEOMEMA units.

SEC data:

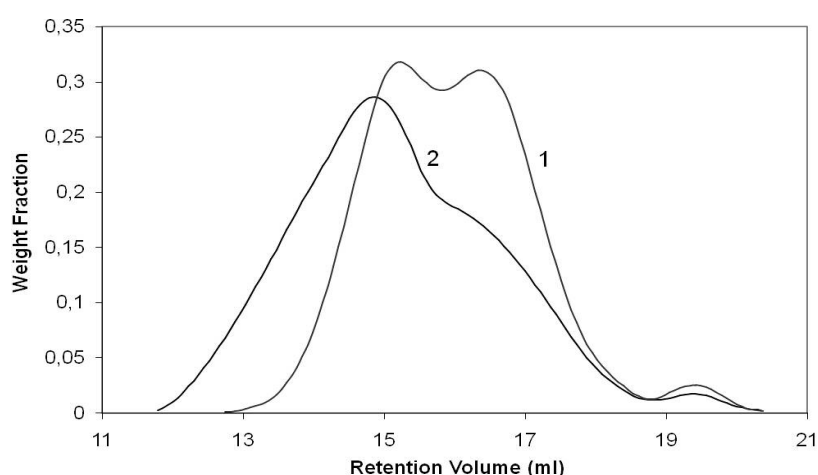


Fig. 2. SEC elution curves of the polymers C100 (1) and C30 (2)

Polymer samples contained small amount of PEOMEMA dimers (retention volume 19.3 ml).

Molecular weight distribution curves of the samples C100 and C30 were bimodal with the peaks at about MW 100 kDa (retention volume 16.5 ml) and 500 kDa (retention volume 15.0 – 15.2 ml).

Explanation concerning the calculation of the composition of C30 copolymer

1.68% is the mass fraction (mass %) of OH groups with respect to the total polymer mass. Further calculations are done as follows:

1. Mass fraction of HEMA units in the copolymer was calculated using formula:

$$HEMA(\text{mass \%}) = \frac{1.68 \times 130.14}{17.01} = 12.85$$

where 130.14 and 17.01 are the molecular mass of HEMA and OH, respectively.

Then mass fraction of PEOMEMA is $100 - 12.85 = 87.15\%$.

2. Molar fraction of HEMA units in the copolymer (in mole %) was calculated using formula:

$$HEMA(\text{mol\%}) = \frac{\frac{12.85}{130.14}}{\frac{12.85}{130.14} + \frac{87.15}{2080}} \times 100 = 70.2$$

where 2080 is the molecular mass of PEOMEMA.

Therefore the mole fraction of PEOMEMA units in the copolymer is $100 - 70.2 = 29.8$ mole%