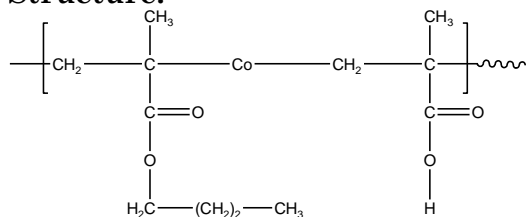


Sample Name:

Random Copolymer Poly(n-Butyl methacrylate-co-methacrylic acid)

Sample #: P5789-nBuMAMAA ran

Structure:



Composition: PMAA: by titration 5%

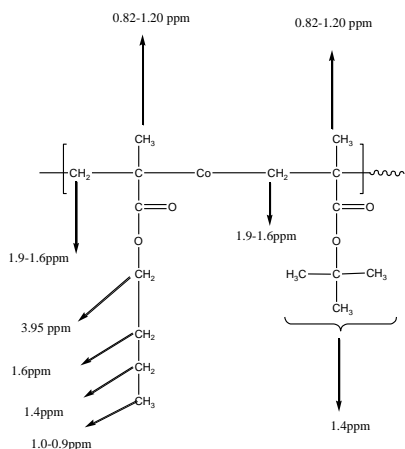
$M_w \times 10^3$ (Mn) PnBuMA-co-MAA	PDI
252.0 (70.0)	3.6
T_g of random polymer nBuMAAtBuMAran	42 oC
T_g of random polymer nBuMAMAAArAn	46 oC
nBuMA:tert.BuMA	95:5
Tacticity of the polymer Syndio:hetero:iso fractions	67:27:6

Synthesis Procedure:

Random Copolymer Poly(n-Butylmethacrylate-co-tert.butyl methacrylate) is prepared by anionic polymerization. The product was hydrolysed in dioxane to convert poly tert.BuMA fraction to methacrylic acid.

Characterization:

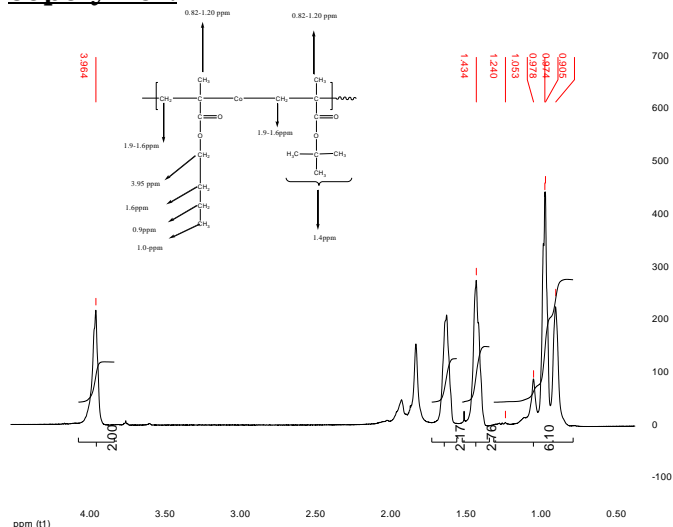
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from $^1\text{H-NMR}$ spectroscopy by comparing the peak area of the protons of methylene (-CH₂) of nBuMA at 4ppm and tert.butyl of tert.BuMA at about 1.4 ppm.



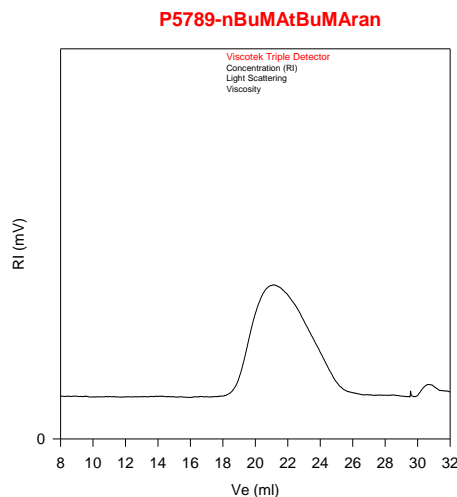
Solubility:

CHCl_3	soluble
THF	soluble
Methanol	Insoluble
DMF	Soluble

$^1\text{H-NMR}$ Spectrum of the random copolymer:



SEC of the random copolymer:

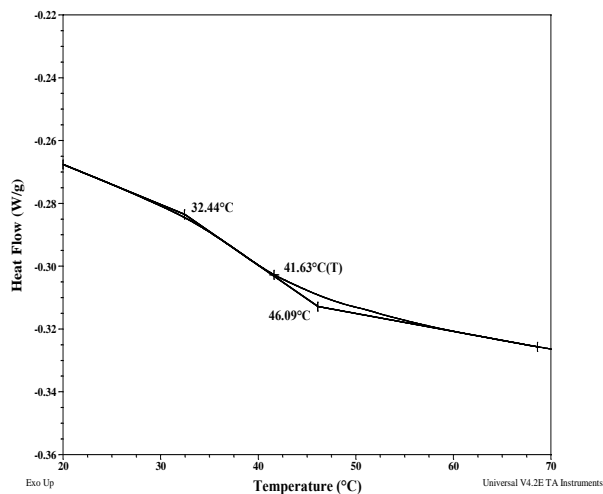


Size Exclusion Chromatography of Copolymer:
— $M_n = 70,000$, $M_w = 252,000$, $M_w/M_n = 3.6$

Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Thermograms for random polymer nBuMAAtBuMAran:



Thermograms for random polymer nBuMAMAAran:

