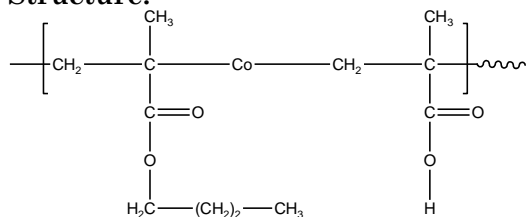


**Sample Name:**

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

**Sample #:** P5786A-nBuMAMAA ran

**Structure:**

**Composition: PMAA: by titration 44%**

Mw × 10 <sup>3</sup> (Mn) PnBuMA-co-MAA	PDI
1,600.0 (1,250.0)	1.28
T <sub>g</sub> of random polymer nBuMatBuMAran	62°C
T <sub>g</sub> of random polymer nBuMAMAAran	74°C
nBuMA:tert.BuMA	54:46
Tacticity of the polymer Syndio:hetero:iso fractions	36:62:2

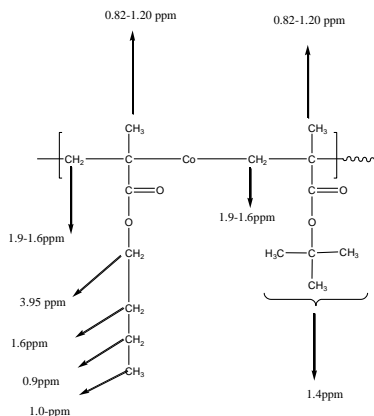
% of PMAA in the copolymer by titration  
(0.1021N NaOH 2700 micro L for 50mg of polymer)

**Synthesis Procedure:**

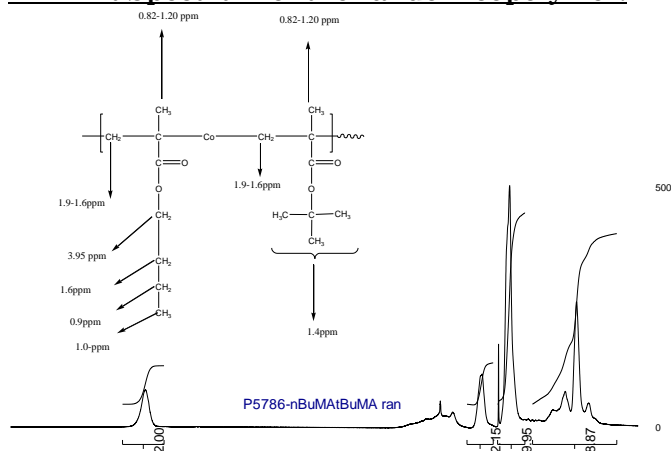
Random Copolymer Poly(n-Butylmethacrylate-co-tert.butyl methacrylate) is prepared by anionic polymerization. The product was hydrolysed in dioxane to convert poly tert.BuMA fraction to methacrylic acid.

**Characterization:**

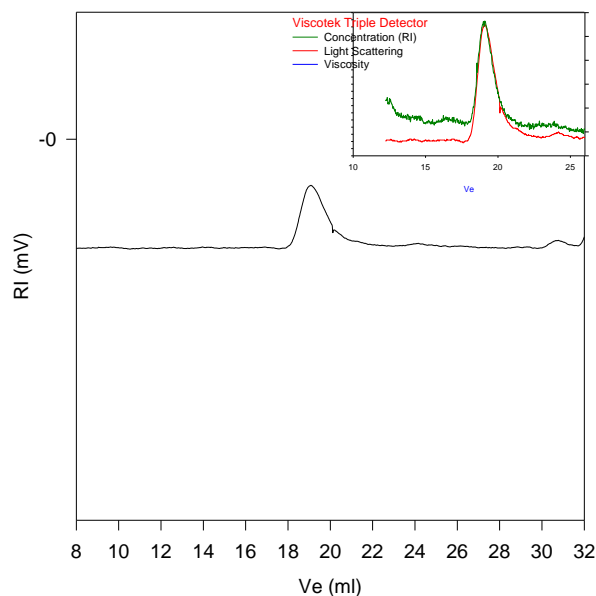
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the protons of methylene (-CH<sub>2</sub>) of nBuMA at 4ppm and tert.butyl of tert.BuMA at about 1.4 ppm.

**Solubility:**

CHCl <sub>3</sub>	insoluble
THF	insoluble (swell slightly)
Methanol	Soluble
DMF	Soluble

**<sup>1</sup>H-NMR Spectrum of the random copolymer:****SEC of the random copolymer:**

**P5785-nBuMATBuMAran**



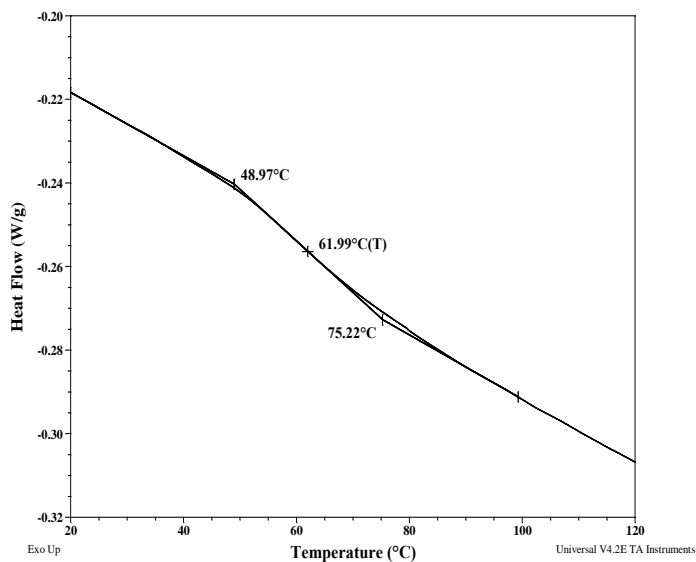
Size Exclusion Chromatography of Copolymer:

— M<sub>n</sub> = 750,000, M<sub>w</sub> = 975,000, M<sub>w</sub>/M<sub>n</sub> = 1.30  
Solution Viscosity in THF at 35 °C: 2.526dl/g  
dn/dc in THF at 35 °C: 0.084 ml/g  
Rgw: 42.12nm  
After Hydrolysis of tert.butyl ester  
Mw: 756,000 Mn 582,000 Mw/Mn 1.3

## 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:

