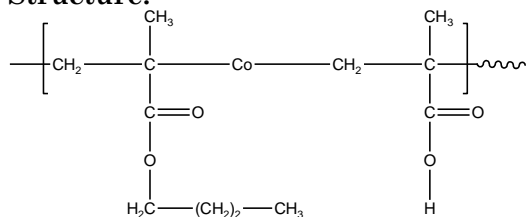


**Sample Name:**

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

**Sample #:** P5787A-nBuMAMAA ran

**Structure:**

**Composition: PMAA: by titration 26%**

Mw × 10 <sup>3</sup> (Mn) PnBuMA-co-MAA	PDI
598.0 (467.0)	1.28
T <sub>g</sub> of random polymer nBuMA <sub>t</sub> BuMA <sub>r</sub> an	109 °C
T <sub>g</sub> of random polymer nBuMAMAA <sub>r</sub> an	87 °C
nBuMA:tert.BuMA	55:45
Tacticity of the polymer Syndio:hetero:iso fractions	67:27:6

% of PMAA in the copolymer by titration

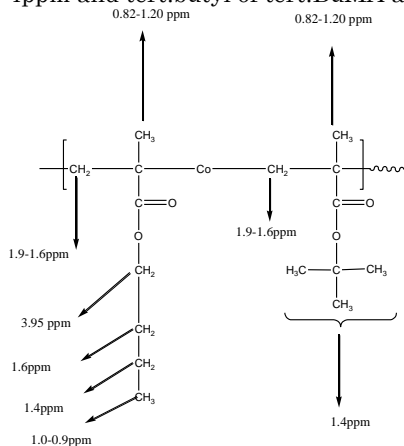
(2.7 ml 0.1021(N) NaOH consumed for 50mg of polymer)

**Synthesis Procedure:**

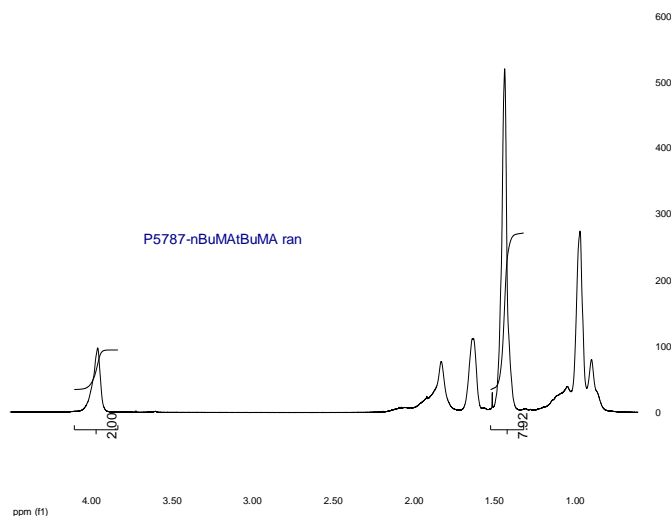
Random Copolymer Poly(n-Butylmethacrylate-co-tert.butyl methacrylate) is prepared by anionic polymerization. The product was hydrolysed in dioxane to convert poly tert.BuMA fraction to methacrylic acid.

**Characterization:**

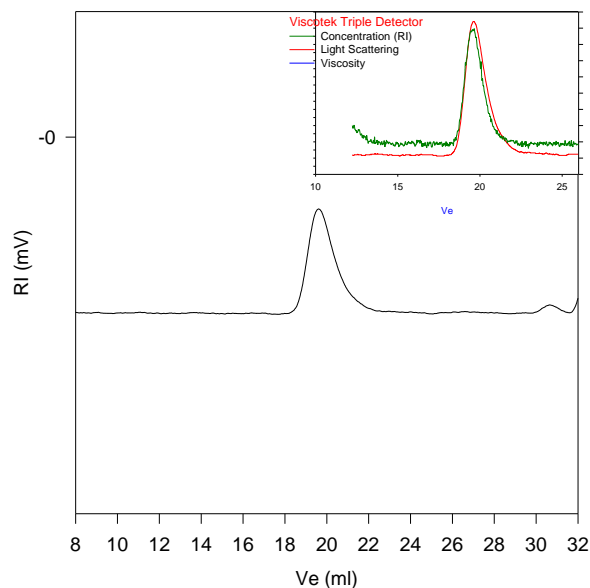
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the protons of methylene (-CH<sub>2</sub>) of nBuMA at 4ppm and tert.butyl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

**P5787-nBuMA<sub>t</sub>BuMA<sub>r</sub>an**

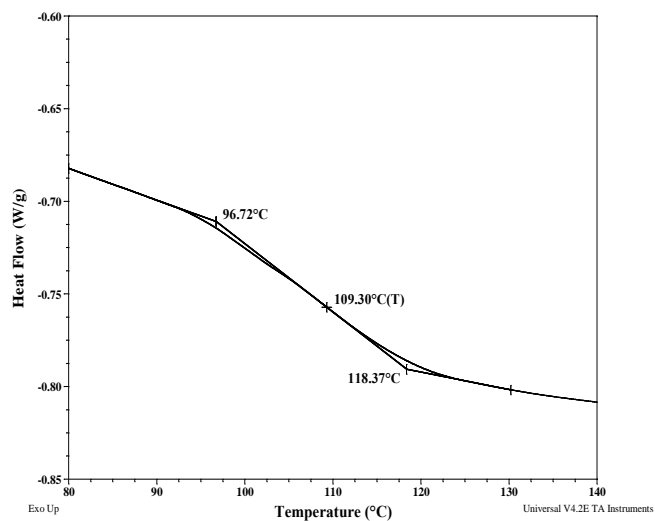
**Size Exclusion Chromatography of Copolymer:**

— M<sub>n</sub> = 520,000, M<sub>w</sub> = 665,500, M<sub>w</sub>/M<sub>n</sub> = 1.28  
 Solution Viscosity in THF at 35 °C: 1.735dl/g  
 dn/dc in THF at 35 °C: 0.084 ml/g  
 R<sub>g</sub>: 32.08nm  
 After Hydrolysis of ester:  
 Mn : 467,000 Mw: 598,000 Mw/Mn 1.28

## 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:

