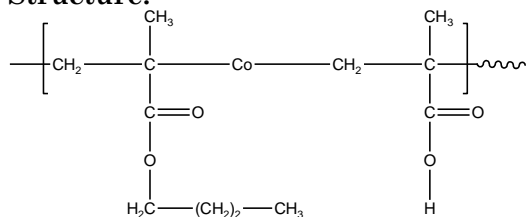


Sample Name:

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

Sample #: P5771A-nBuMAMAA ran

Structure:**Composition: PMAA = 42% by titration**

Mw × 10 ³ (Mn) PnBuMA-co-MAA	PDI
236.0 (189.0)	1.25
T _g of random polymer nBuMA _t BuMA _r an	57 °C
T _g of random polymer nBuMAMAA _r an	95 °C
nBuMA:tert.BuMA	55:45
Tacticity of the polymer Syndio:hetero:iso fractions	70:28:2

% of PMAA in the copolymer by titration

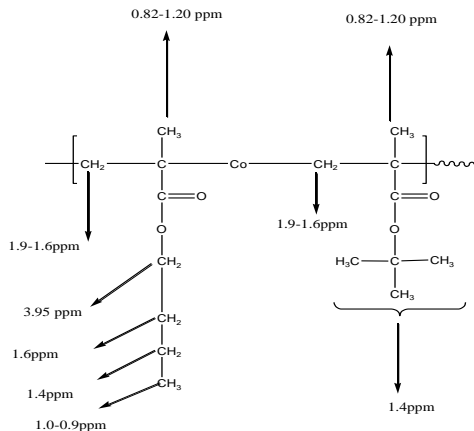
(2.15 ml of 0.1021N NaOH consumed for 50mg of polymer)

Synthesis Procedure:

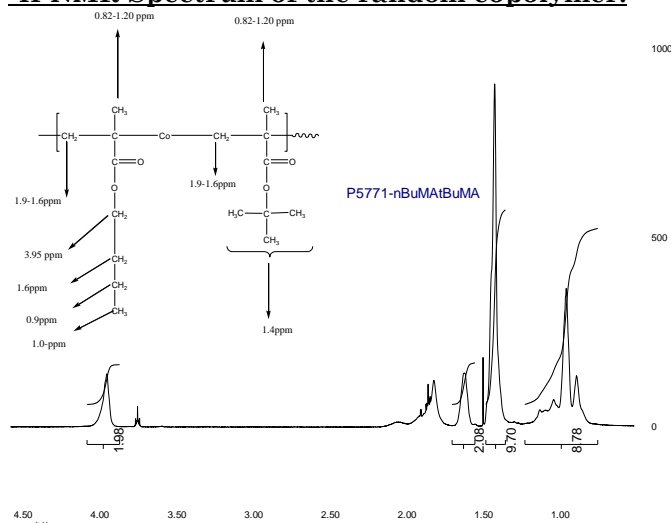
Random Copolymer Poly(n-Butylmethacrylate-co-tert.butyl methacrylate) is prepared by anionic polymerization. The product was hydrolysed in dioxane to convert poly tert.BuMA fraction to methacrylic acid.

Characterization:

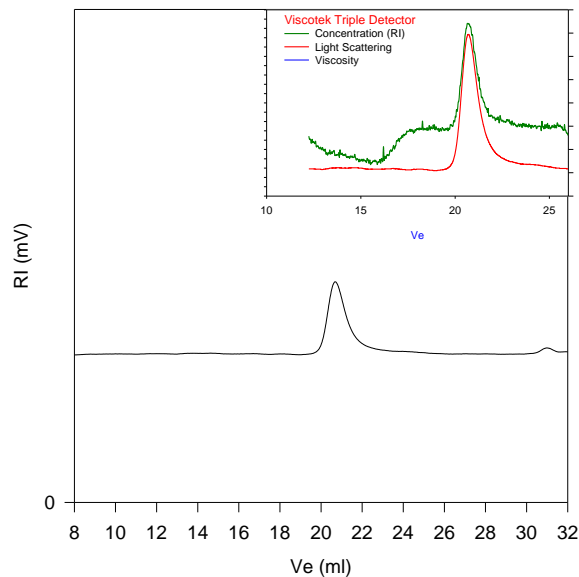
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the protons of methylene (-CH₂) of nBuMA at 4ppm and tert.butyl of tert.BuMA at about 1.4 ppm.

**Solubility:**

CHCl ₃	swell
THF	insoluble or Swell
Methanol	soluble
DMF	Soluble
Dioxane	Soluble

¹H-NMR Spectrum of the random copolymer:**SEC of the random copolymer:**

P5771A-nBuMA_tBuMA_ran

**Size Exclusion Chromatography of Copolymer:**

— M_n = 230,000, M_w = 288,000, M_w/M_n = 1.25

Solution Viscosity in THF at 35 °C: 1.121 dl/g

dn/dc in THF at 35 °C: 0.084 ml/g

R_g: 21.21 nm

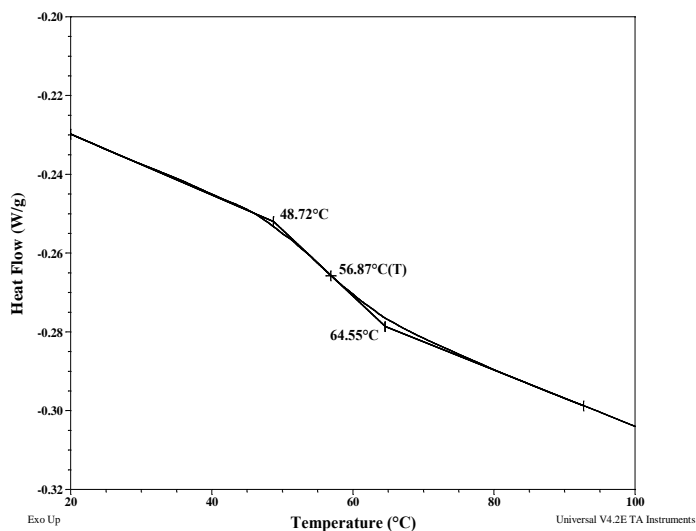
After Hydrolysis of tert.butyl ester: PnBuMAMAA ran

Mn: 189,000 Mw/Mn 1.25

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:

