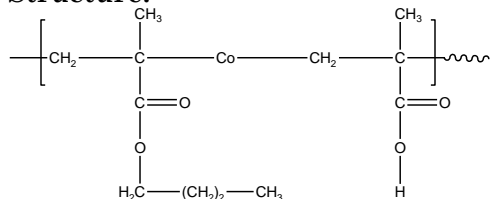


Sample Name:

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

Sample #: P5773A-nBuMAMAA ran

Structure:**Composition: PMAA 12.5% by Titration**

Mw × 10 ³ (Mn) PnBuMA-co-MAA	PDI
584.0 (486.0)	1.20
T _g of random polymer nBuMA _t BuMA _r an	51 °C
T _g of random polymer nBuMAMAA _r an	80 °C
nBuMA:tert.BuMA	80:20
Tacticity of the polymer Syndio:hetero:iso:fractions	77:21:2

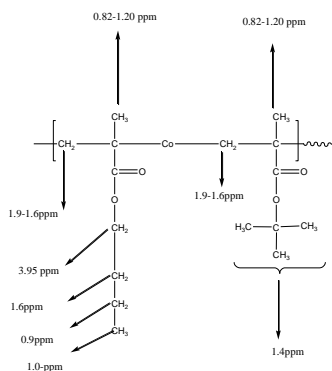
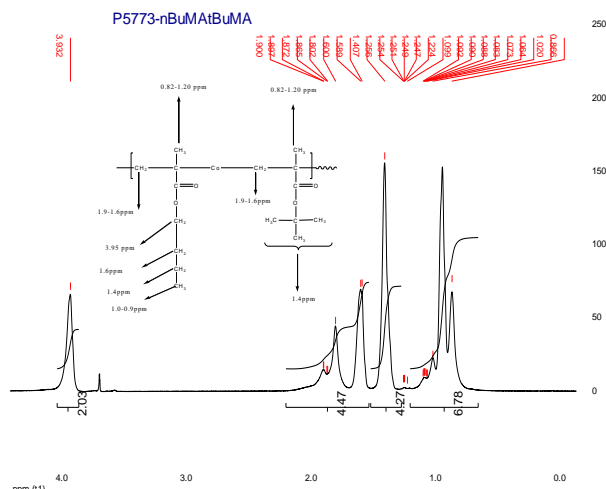
% of PMAA in the copolymer by titration 12.5%
(0.1021N NaOH 720 micro L for 50mg of polymer)

Synthesis Procedure:

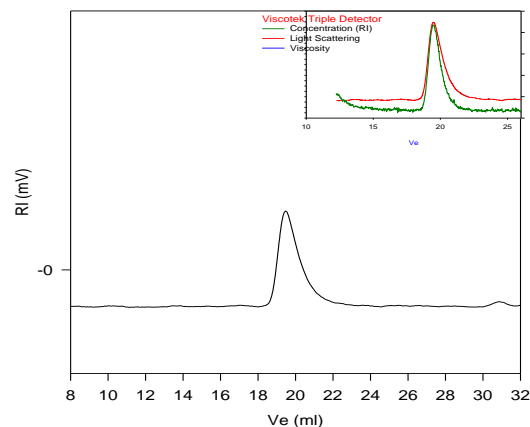
Random Copolymer Poly(n-Butylmethacrylate-co-tert.butyl methacrylate) is prepared by anionic polymerization. The product was hydrolyse in dioxane to convert poly tert.BUMA fraction to methacrylic acid.

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 peak area of the protons of methylene (-CH₂) of nBuMA at 4ppm and tert.butyl of tert.BuMA at about 1.4 ppm.

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

P5773A-nBuMA_tBuMA_ran



Size Exclusion Chromatography of Copolymer:

M_n = 528,000, M_w = 634,000, M_w/M_n = 1.20

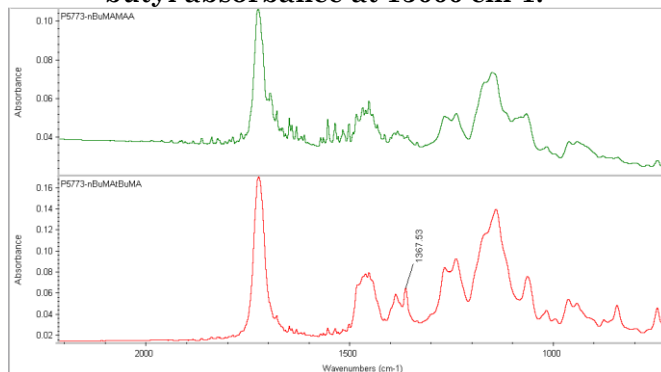
Solution Viscosity in THF at 35 °C: 1.92 dl/g

dn/dc in THF at 35 °C: 0.084 ml/g

R_g: 34.50 nm

After Hydrolysis of tert.butyl ester to methacrylic acid:

M_w: 584,000 M_n: 486,000 M_w/M_n: 1.20

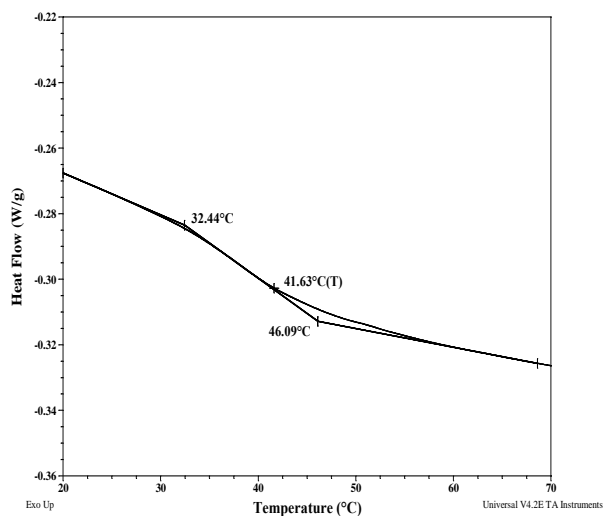
FTIR showing disappearance of tert butyl absorbance at 13666 cm⁻¹.**Solubility:**

CHCl ₃	swell
THF	Soluble
Methanol	Insoluble
DMF	Soluble
Dioxane	Soluble

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).

Thermogram for random polymer nBuMAAtBuMAran:



Thermogram for random polymer nBuMAMAAran:

