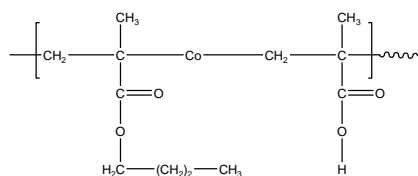


Sample Name:

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

Sample #: P5770A-nBuMAMAA ran**Structure:****Composition: PMAA by titration 40%**

Mw × 10 ³ (Mn)	PDI
PnBuMA-co-MAA	
232.0 (155.0)	1.5
T _g of random polymer nBuMAAtBuMAran	57 °C
T _g of random polymer nBuMAMAAran	91 °C
nBuMA:MAA	60:40
Tacticity of the polymer Syndio:hetero:iso fractions	70:28:2

% of PMAA in the copolymer by titration 40%

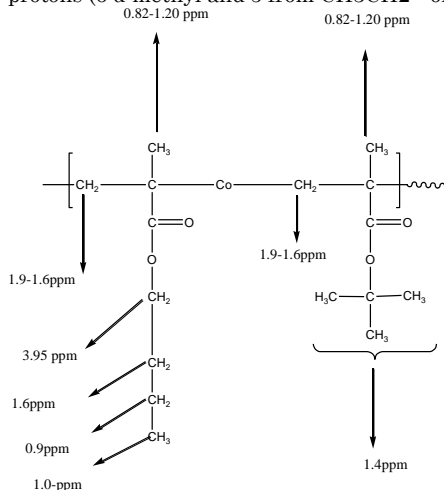
(0.1021N NaOH 2300 micro L for 50mg of polymer)

Synthesis Procedure:

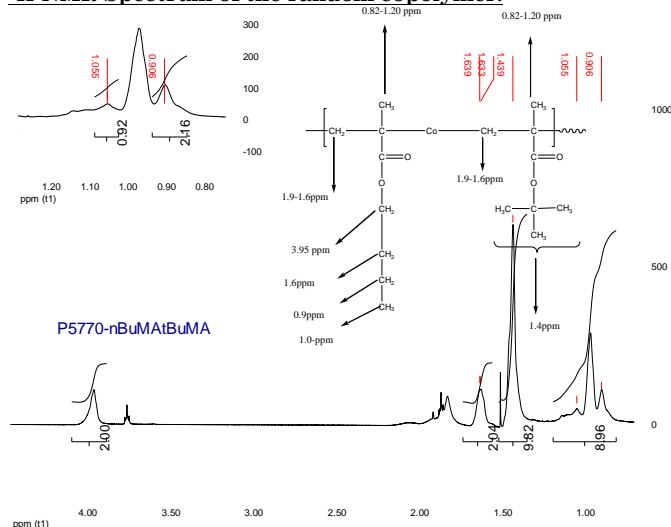
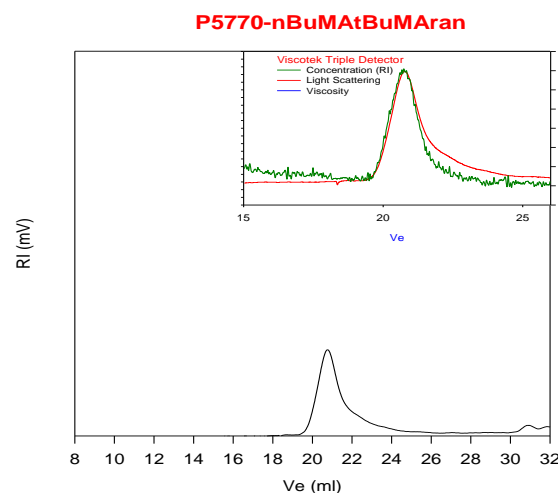
Random Copolymer Poly(n-Butylmethacrylate-co-tert.butyl methacrylate) is prepared by anionic polymerization. The product was hydrolysed in dioxane to convert poly tert.BuMA fraction to methacrylic acid.

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 ¹H-NMR spectroscopy by comparing the peak of the protons of methylene (-CH₂) of nBuMA at 4ppm and tert.butyl of tert.BuMA at about 1.4 ppm or considering the entire region between 0.8 to 1.3 ppm for 11 protons (6 α-methyl and 5 from CH₃CH₂-- of n Butyl group).

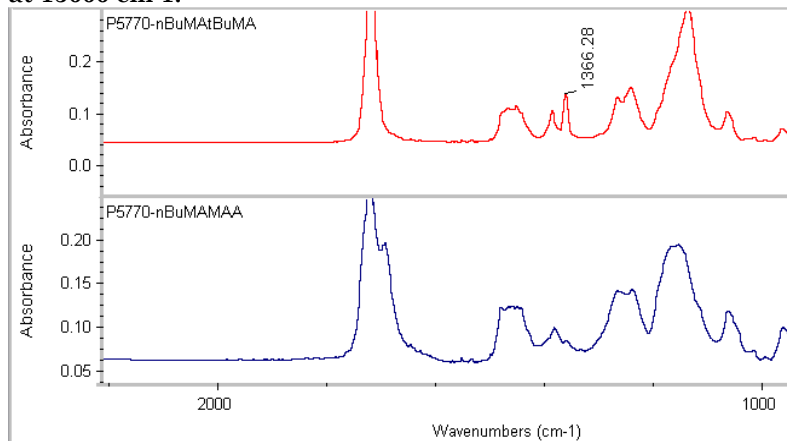
**Solubility:**

CHCl ₃	swell
THF	soluble in warm THF
Methanol	Insoluble
DMF	Soluble
Dioxane	Soluble

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

Size Exclusion Chromatography of Copolymer:

$M_n = 155,000$, $M_w = 232,000$, $M_w/M_n = 1.5$
 Solution Viscosity in THF at 35 °C: 0.952dL/g
 dn/dc in THF at 35 °C: 0.084 mL/g
 R_{gw} : 19.76 nm

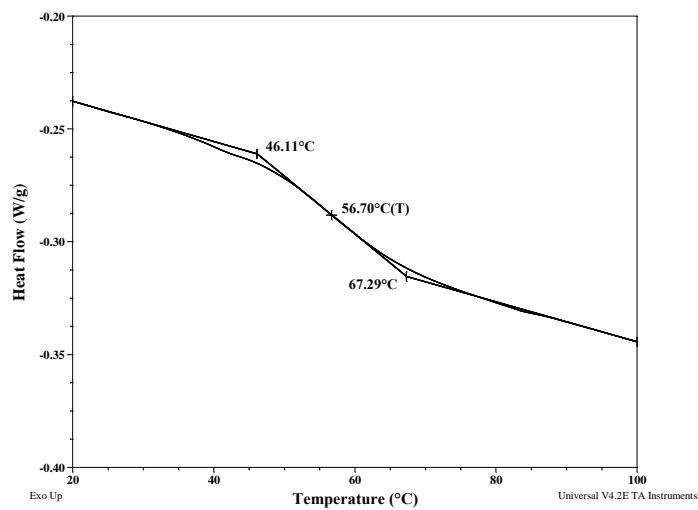
FTIR showing disappearance of ter butyl absorbance at 13666 cm⁻¹.

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

nBuMA_tBuMA_rAr_n:



Thermogram for random polymer

nBuMAMAA_rAr_n:

