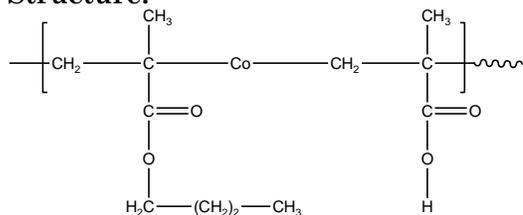


Sample Name:

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

Sample #: P5771A-nBuMAMAA ran

Structure:



Composition: PMAA = 42% by titration

$M_w \times 10^3$ (Mn)	PDI
PnBuMA-co-MAA	1.25
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

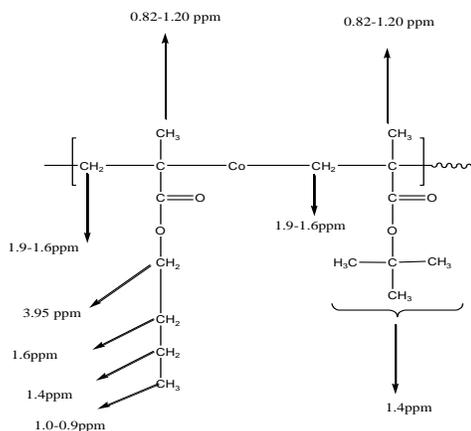
% of PMAA in the copolymer by titration
(2.15 ml of 0.1021N NaOH consumed for 50mg of polymer)

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:

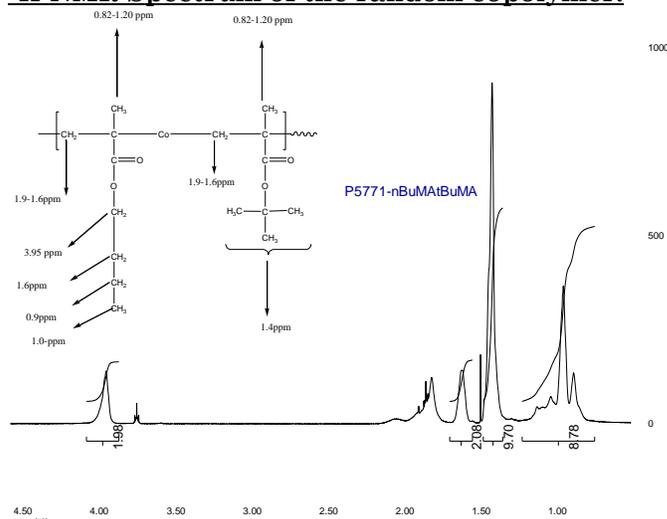
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the protons of methylene (-CH₂) of nBuMA at 4ppm and tert.butyl of tert.BuMA at about 1.4 ppm.



Solubility:

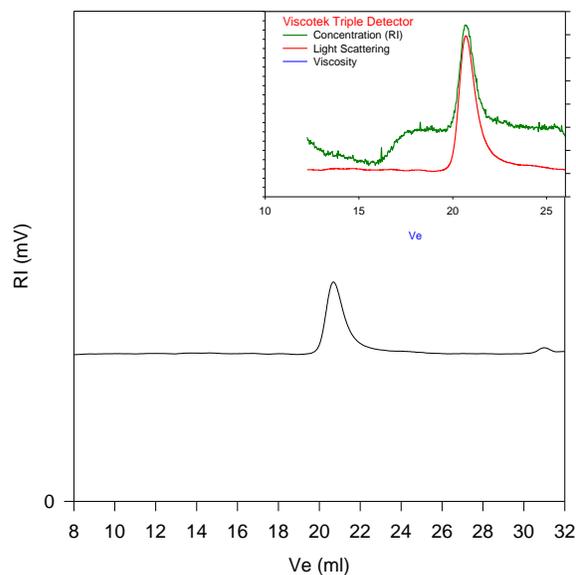
CHCl ₃	swell
THF	insoluble or Swell
Methanol	soluble
DMF	Soluble
Dioxane	Soluble

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

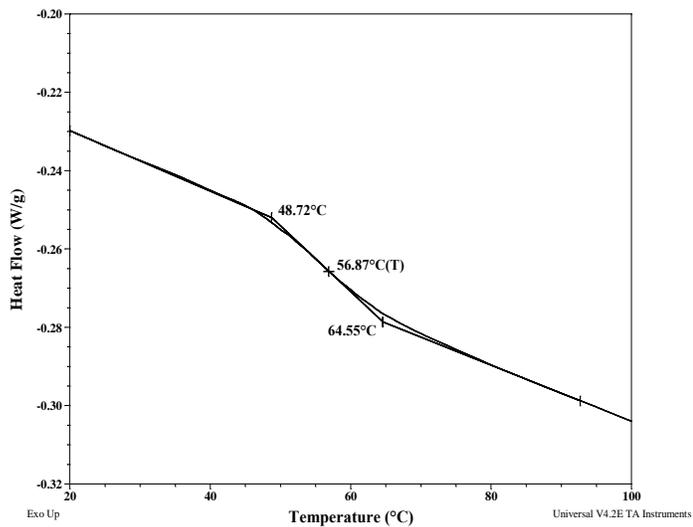
After Hydrolysis of tert.butyl ester: PnBuMAMAA ran

M_n: 189,000 M_w/M_n 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:

