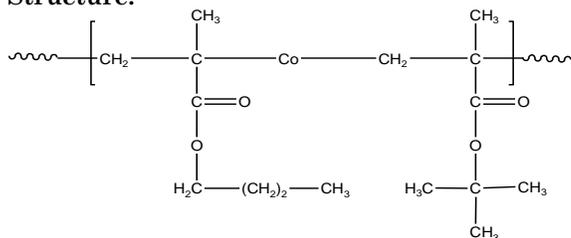


Sample Name:

Random Copolymer Poly(n-Butyl methacrylate-co-tert-butyl methacrylate)

Sample #: P5787-n-BuMAAtBuMA ran

Structure:



Composition:

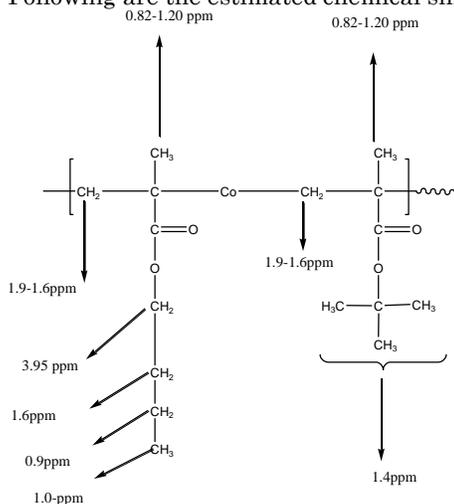
$M_n \times 10^3$ PnBuMA-co-tert.BuMA	PDI
520.0	1.28
T_g of random polymer	114 °C
nBuMA:Tert.BuMA	55:45
Syndio:hetero:iso fraction	77:21:2

Synthesis Procedure:

Random Copolymer Poly(n-Butylmethacrylate-co-tert.butyl methacrylate) is prepared by anionic polymerization.

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 $^1\text{H-NMR}$ 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. Following are the estimated chemical shifts:

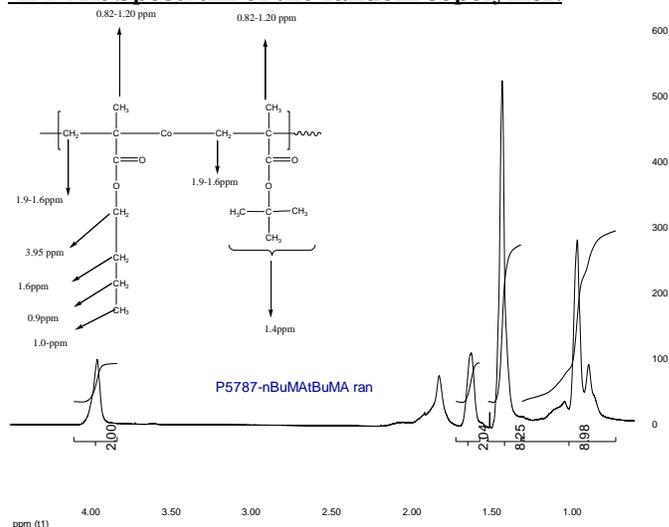


Thermal analysis

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).

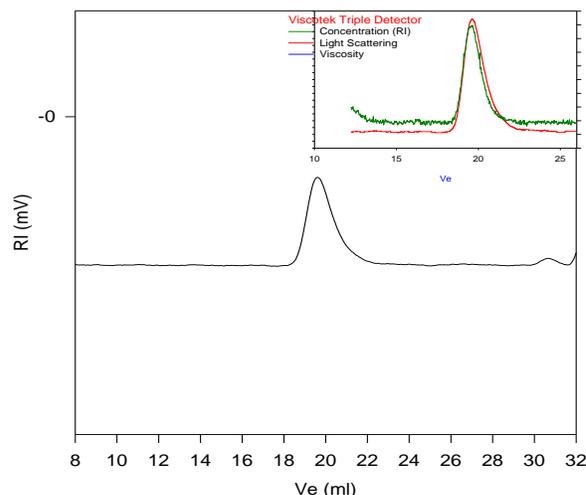
Solubility: The polymer is soluble in CHCl₃, THF, DMF, toluene and precipitated out from methanol and water.

$^1\text{H-NMR}$ Spectrum of the random copolymer:



SEC of the random copolymer:

P5787-nBuMAAtBuMAran



Size Exclusion Chromatography of Copolymer:

$M_n = 520,000$, $M_w = 665,500$, $M_w/M_n = 1.28$
Solution Viscosity in THF at 35 °C: 1.735 dl/g
 dn/dc in THF at 35 °C: 0.084 ml/g
Rgw: 32.08 nm

Thermogram for the sample:

