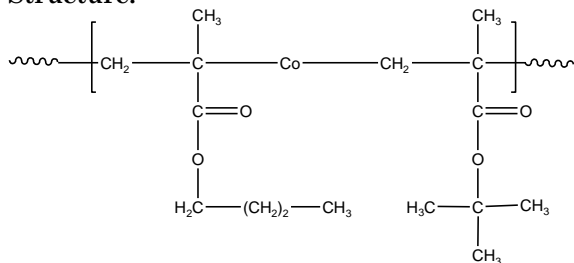


Sample Name:

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

Sample #: P5794-n-BuMA-tBuMA ran

Structure:**Composition:**

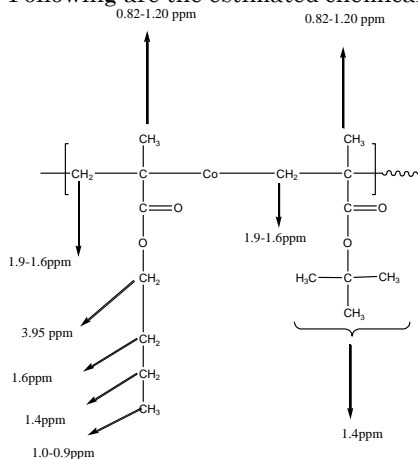
$M_n \times 10^3$ PnBuMA-co-tert.BuMA	PDI
420.0	1.3
T_g of random polymer	44 °C
nBuMA:tBuMA ratio	70:30
Syndio:hetero:iso fraction	44:50:5

Synthesis Procedure:

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

Characterization:

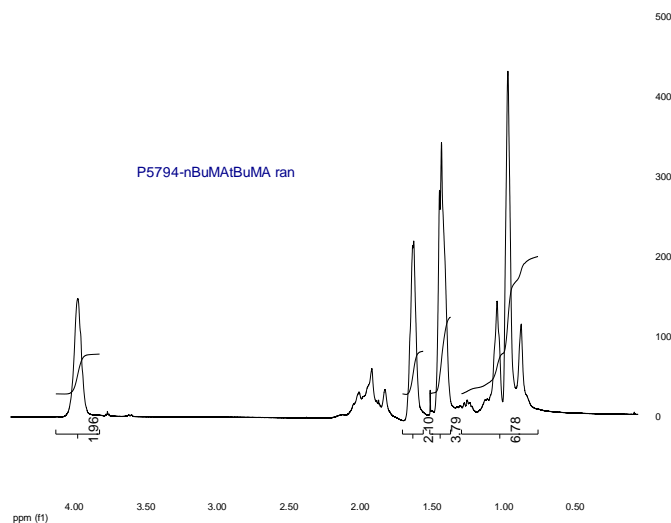
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from $^1\text{H-NMR}$ spectroscopy by comparing the peak area of the protons of methylene ($-\text{CH}_2$) of nBuMA at 4ppm and tert.butyl of tert.BuMA at about 1.4 ppm. Following are the estimated chemical shifts:

**Thermal analysis**

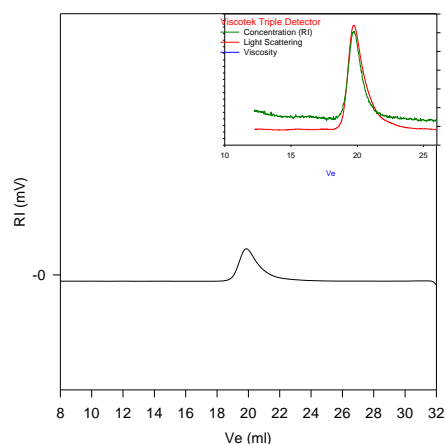
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of $10^\circ\text{C}/\text{min}$. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

The polymer is soluble in CHCl_3 , THF, DMF, toluene and precipitated out from methanol and water.

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

P5794-nBuMA-tBuMAran

**Size Exclusion Chromatography of Copolymer:**

$M_n = 420,000$, $M_w = 546,000$, $M_w/M_n = 1.3$
Solution Viscosity in THF at 35°C : 1.624 dL/g
 dn/dc in THF at 35°C : 0.084 mL/g
 R_{90} : 29.70 nm

Thermogram for the sample: