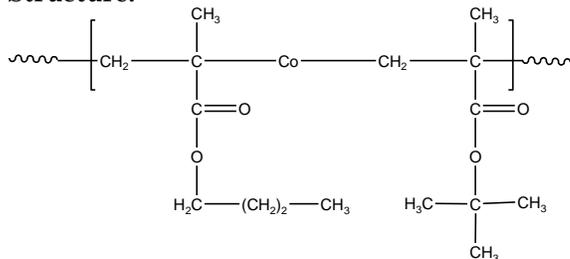


Sample Name:

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

Sample #: P5773B-n-BuMAAtBuMA ran

Structure:



Composition:

Mn × 10 ³ PnBuMA-co-tert.BuMA	PDI
530.0	1.3
T _g of random polymer	52 °C
Ratio of nBuMA:tBuMA	70:30
Syndio:hetero:iso fraction	73:25:2

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 ¹H-NMR spectroscopy by comparing the peak area the aromatic protons of ppm with the protons of methylene (-CH₂) of nBuMA at 4ppm and tert.butyl at about 1.4 ppm. Following are the estimated chemical shifts:

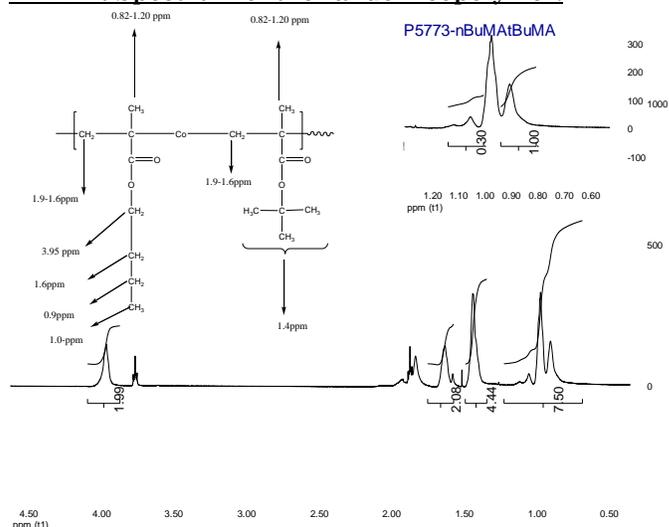
Thermal analysis

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:

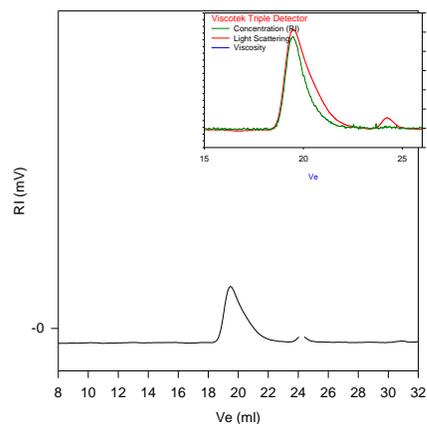
The polymer is soluble in CHCl₃, THF, DMF, toluene and precipitated out from methanol and water.

¹H-NMR Spectrum of the random copolymer:



SEC of the random copolymer:

P5773B-nBuMAAtBuMAran



Size Exclusion Chromatography of Copolymer:

M_n = 530,000, M_w = 689,000, M_w/M_n = 1.3
Solution Viscosity in THF at 35 °C: 1.968 dl/g
dn/dc in THF at 35 °C: 0.084 ml/g
R_{gw}: 32.61 nm

Thermogram for the sample:

