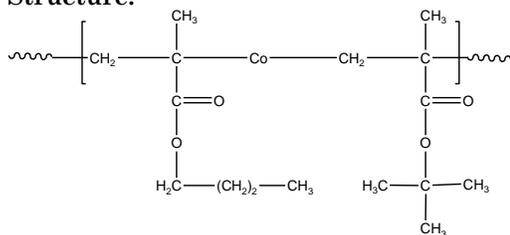


Sample Name:

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

Sample #: P5783B-n-BuMAAtBuMA ran

Structure:



Composition:

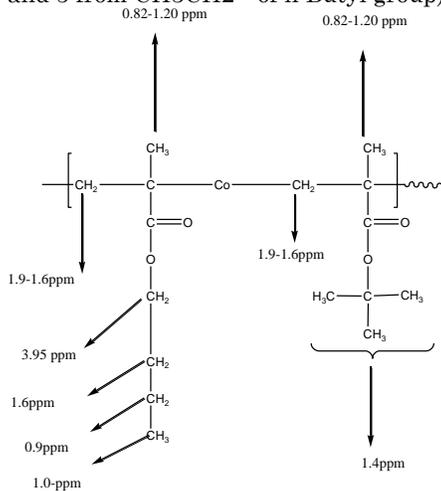
Mn × 10 ³ PnBuMA-co-tert.BuMA	PDI
113.0	1.18
T _g of random polymer	82 °C
nBuMA:tert.BuMA	45:55
Syndio:hetero:iso fraction	67:27:6

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. 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).



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).

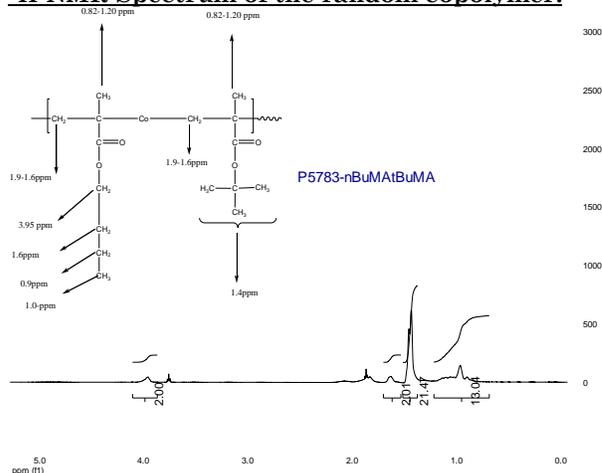
Solubility:

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

FTIR of the polymer:

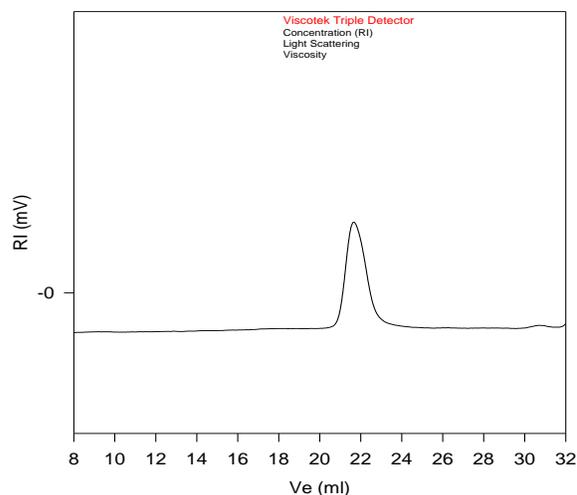
It is interesting to note that the C=O (ester) in the rich Poly tert.butyl methacrylate shifts from 1730Cm⁻¹ in case of Poly n-butylmethacrylate rich polymer to 1724Cm⁻¹ in the poly tert-butyl metacrylate rich polymer. The tert.butyl ester.

¹H-NMR Spectrum of the random copolymer:



SEC of the random copolymer:

P5783B-nBuMAAtBuMAran



Size Exclusion Chromatography of Copolymer:

M_n = 113,000, M_w = 133,000, M_w/M_n = 1.18
dn/dc in THF at 35 °C: 0.084 ml/g

Thermogram for the sample:

