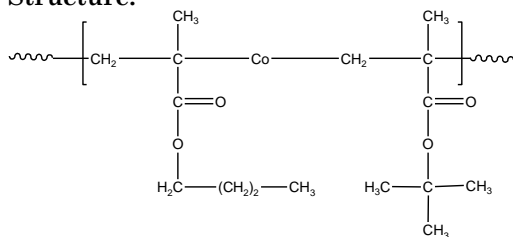


**Sample Name:**

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

**Sample #: P5783B-n-BuMAAtBuMA ran**

**Structure:****Composition:**

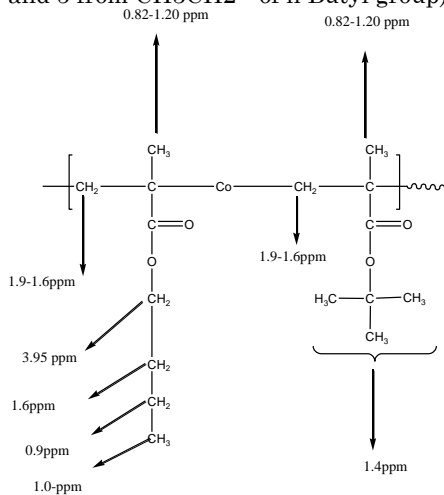
Mn × 10 <sup>3</sup>	PDI
PnBuMA-co-tert.BuMA	
113.0	1.18
T <sub>g</sub> of random polymer	82 °C
nBuMA:tert.BuMA	45:55
Syndio:hetero:iso fraction	67:27:6

**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 <sup>1</sup>H-NMR spectroscopy by comparing the peak area the aromatic protons of ppm with the protons of methylene (-CH<sub>2</sub>) of nBuMA at 4ppm and tert.butyl of tert.BuMA 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 CH<sub>3</sub>CH<sub>2</sub>-- of n Butyl group).

**Thermal analysis**

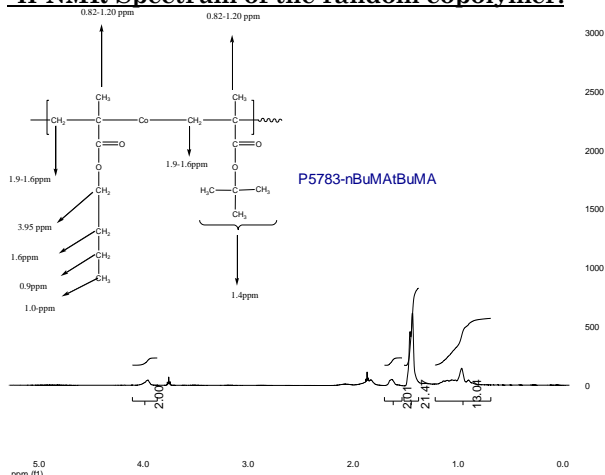
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T<sub>g</sub>).

**Solubility:**

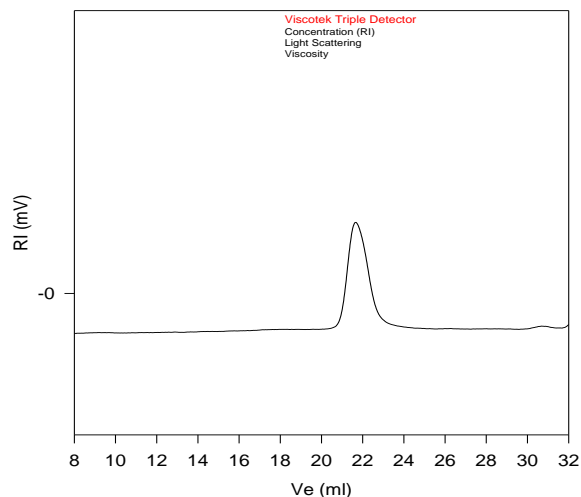
The polymer is soluble in CHCl<sub>3</sub>, THF, DMF, toluene and precipitated out from methanol and water.

**FTIR of the polymer:**

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

**<sup>1</sup>H-NMR Spectrum of the random copolymer:****SEC of the random copolymer:**

**P5783B-nBuMAAtBuMAran**



Size Exclusion Chromatography of Copolymer:

— M<sub>n</sub> = 113,000, M<sub>w</sub> = 133,000, M<sub>w</sub>/M<sub>n</sub> = 1.18  
dn/dc in THF at 35 °C: 0.084 ml/g

**Thermogram for the sample:**