Sample Name:
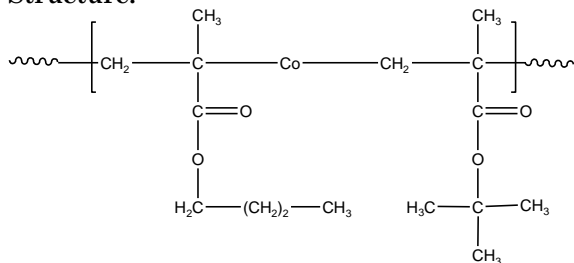**Random Copolymer Poly(n-Butyl methacrylate-co-tert.-butyl methacrylate)**
Sample #: P5776-n-BuMAtBuMA ran

Structure:

Composition:
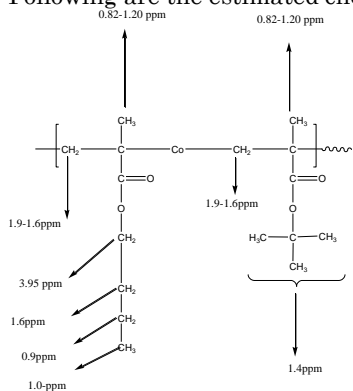
Mn × 10³ PnBuMA-co-tert.BuMA	PDI
340.0	1.2
T_g of random polymer	45 ºC
nBuMA:tBuMA ratio	76:24
Syndio:hetero:iso fraction	77:21:2

Synthesis Procedure:
Random Copolymer Poly(n-Butylmethacrylate-co-tert.butyl methacrylate) is prepared by anionic polymerization.
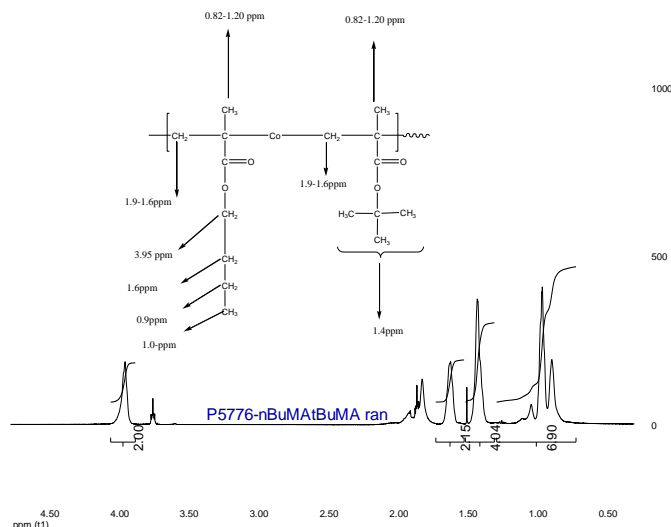
Characterization:
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the protons of methylene (-CH2) of nBuMA at 4ppm and tert.butyl of tert.BuMA at about 1.4 ppm. Following are the estimated chemical shifts:
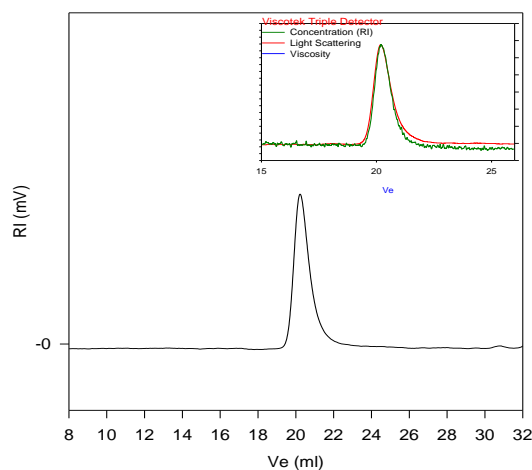

Thermal analysis
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10ºC/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

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

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

SEC of the random copolymer:

Size Exclusion Chromatography of Copolymer:
M_n = 340,000, M_w = 408,000, M_w/M_n = 1.2
Solution Viscosity in THF at 35 oC: 1.517dl/g
dn/dcin THF at 35 oC: 0.084 ml/g
Rgw: 25.94nm

Thermogram for the sample: