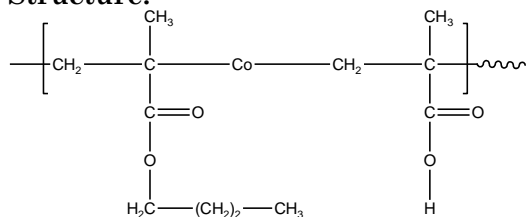


Sample Name:

Random Copolymer Poly(n-Butyl methacrylate-co-methacrylic acid)

Sample #: P5794A-nBuMAMAA ran

Structure:**Composition: PMAA 4% by titration**

| Mw × 10 ³ (Mn) PnBuMA-co-MAA | PDI |
|---|---------|
| 504.0(388.0) | 1.3 |
| T _g of random polymer nBuMA _t BuMA _r an | 40 °C |
| T _g of random polymer nBuMAMAA _r an | 44 °C |
| nBuMA:tert.BuMA | 82:18 |
| Tacticity of the polymer Syndio:hetero:iso fractions | 44:50:5 |

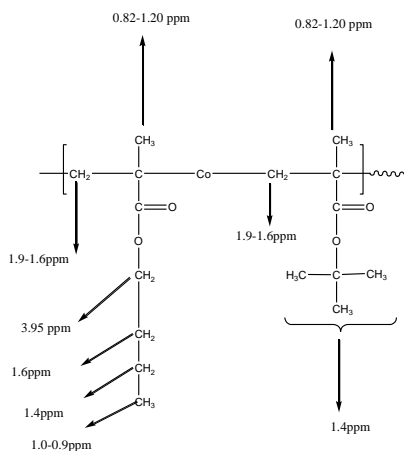
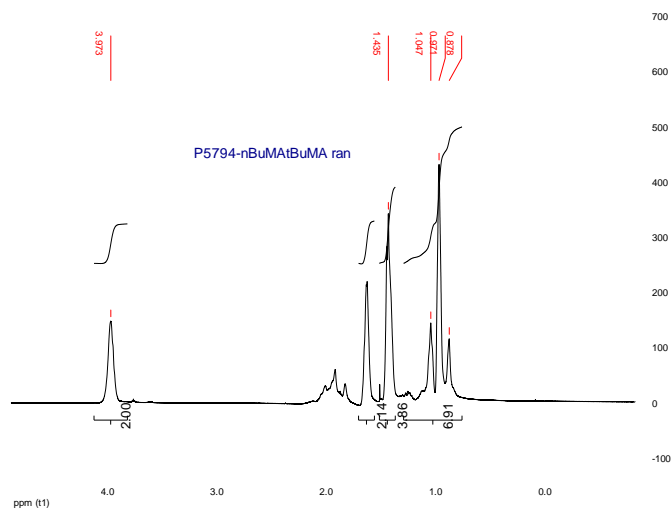
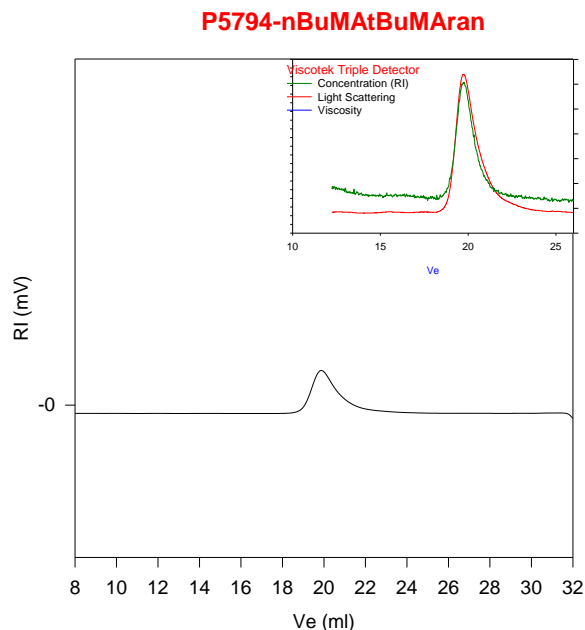
% of PMAA in the copolymer by titration 4.0%
(0.1021N NaOH 230 micro L for 50mg of polymer)

Synthesis Procedure:

Random Copolymer Poly(n-Butylmethacrylate-co-tert.butyl methacrylate) is prepared by anionic polymerization. The product was hydrolysed in dioxane to convert poly tert.BuMA fraction to methacrylic acid.

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 of the protons of methylene (-CH₂) of nBuMA at 4ppm and tert.butyl of tert.BuMA at about 1.4 ppm.

**¹H-NMR Spectrum of the random copolymer:****SEC of the random copolymer:****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_g: 29.70 nm
After Hydrolysis of tert.butyl ester: Mn 388,000 Mw/Mn 1.3

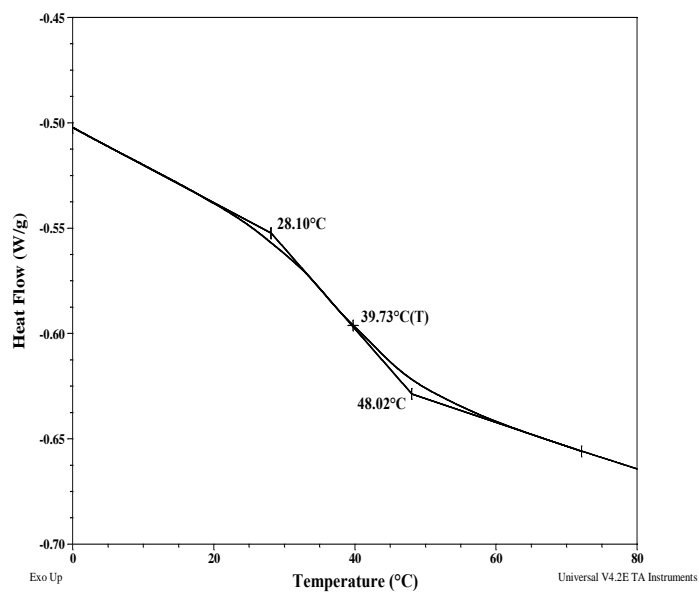
Solubility:

| | |
|-------------------|-----------|
| CHCl ₃ | swell |
| THF | Soluble |
| Methanol | Insoluble |
| DMF | Soluble |

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).

Thermograms for random polymer nBuMAAtBuMAran:



Thermograms for random polymer nBuMAMAAran:

