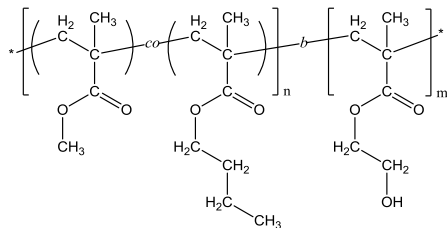


Sample Name:

**Poly(methyl methacrylate-co-n-butyl methacrylate) –
block-poly(2-hydroxyethyl methacrylate)**

Sample #: **P19497-MMA-nBuMAran-b-HEMA**

Structure:



Composition:

$M_n \times 10^3$ (g/mol)	23.0-30.5
M_w/M_n	1.2
Molar ratio MMA : nBuMA	51 : 49 (mol/mol)
Weight ratio MMA:nBuMA:HEMA	18 : 25 : 57 (wt%)
T_g (MMA-nBuMA)	71 °C
T_g (HEMA)	111 °C

Synthesis Procedure:

Poly(methyl methacrylate-co-n-butyl methacrylate)-b-poly(2-hydroxyethyl methacrylate) block copolymer was synthesized by living anionic polymerization. First, methyl methacrylate (MMA) and n-butyl methacrylate (n-BuMA) were co-polymerized; and then 2-[trimethylsilyloxy]ethyl methacrylate (hydroxyl-protected HEMA monomer) was added. The obtained block copolymer was precipitated in acidic methanol solution to deprotect the hydroxyl group.

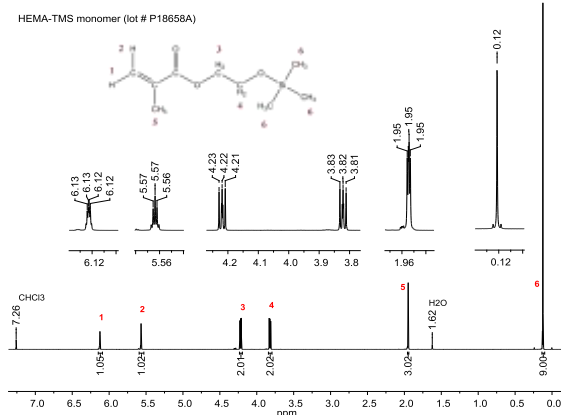
Solubility: The polymer is soluble in THF, DMF.

Characterization:

The polymer composition was calculated by ^1H NMR. The average molecular weight and polydispersity index were determined by size exclusion chromatography (SEC). For SEC analysis, the (MMA-nBuMA)-b-HEMA block copolymer was treated with acetic anhydride in presence of pyridine to convert the hydroxy-groups to acetate groups.

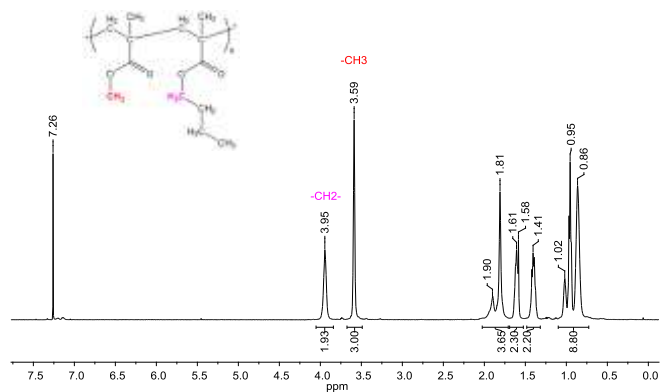
Thermal analysis of the sample was done on a TA Q100 differential scanning calorimeter (DSC) at a heating rate of 10°C/min. The glass transition temperature (T_g) was determined as a midpoint of step change in heat flow curve for the second heating scan.

^1H NMR of HEMA-TMS monomer (500 MHz, CDCl_3):



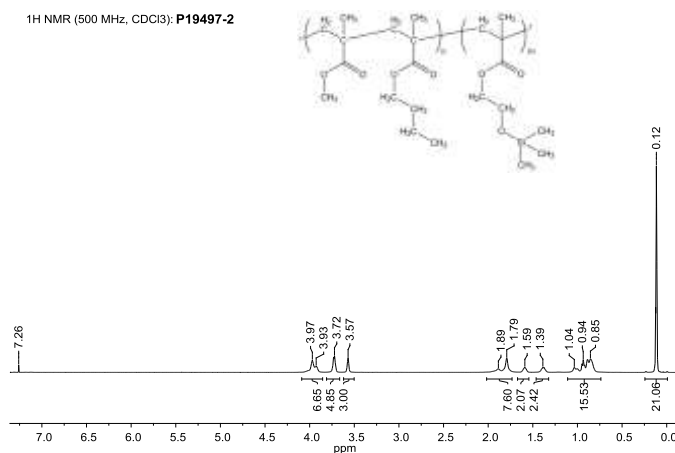
^1H NMR of MMA-nBuMA [first block] in CDCl_3 :

^1H NMR (500 MHz, CDCl_3): P19497-1 (MMA : nBuMA = 51 : 49, mol%)

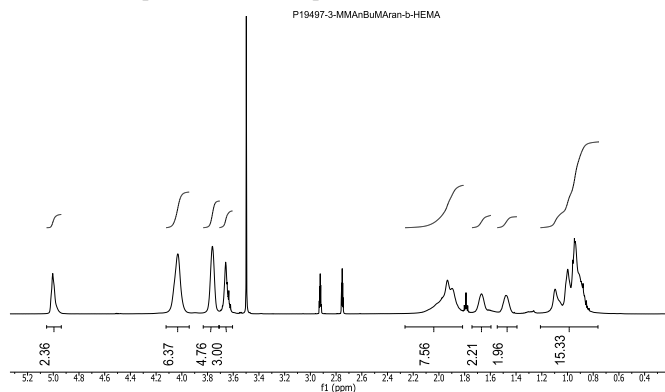


^1H NMR of [MMA-nBuMA]-b-HEMA-TMS in CDCl_3 :

^1H NMR (500 MHz, CDCl_3): P19497-2

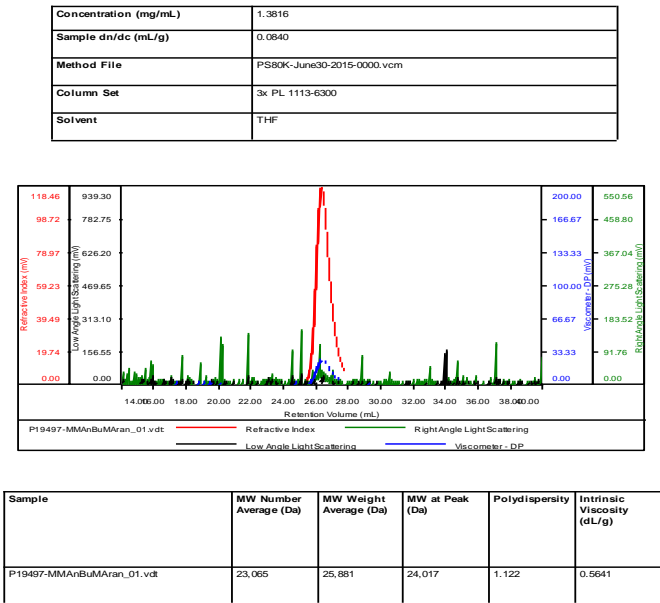


^1H NMR of [MMA-nBuMA]-b-HEMA in DMF-d_7 :

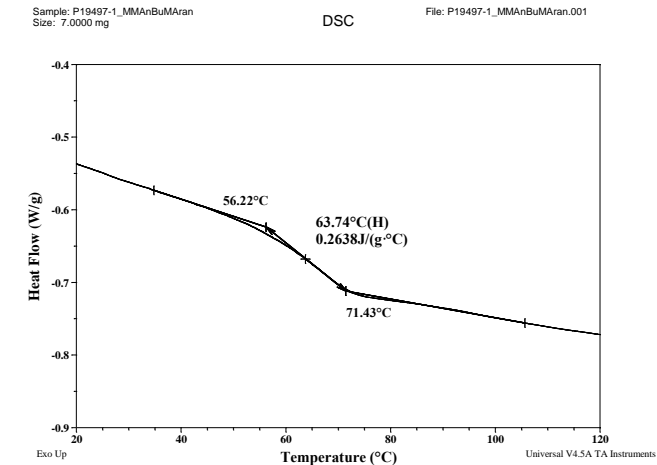


SEC of MMA-nBuMA [first block]:

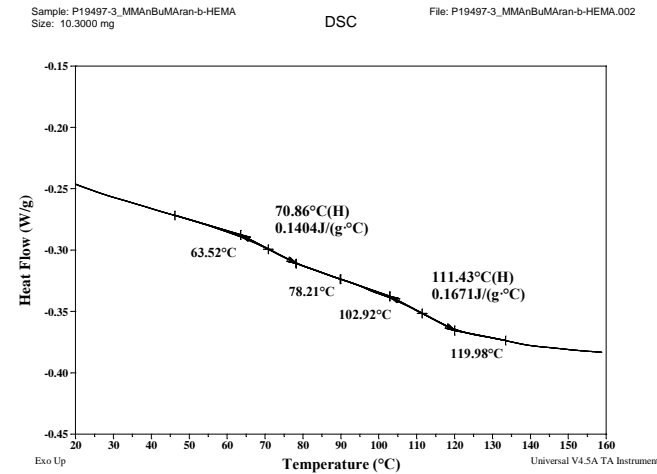
Sample ID-P19497-1- MMAnBuMAran



DSC of MMA-nBuMA [first block]:



DSC of [MMA-nBuMA]-b-HEMA diblock copolymer:



SEC of [MMA-nBuMA]-b-HEMA-TMS:

Sample ID-P19497-2 MMAnBuMAran-b-HEMATMS

