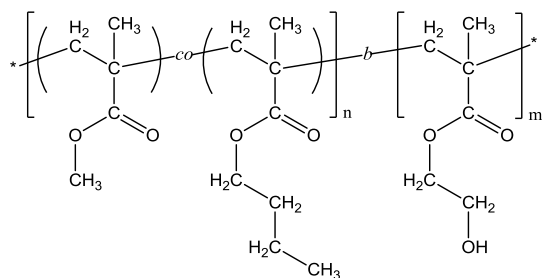


Sample Name:

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

Sample #: **P40430-MMA_nBuMA_{ran}-b-HEMA**

Structure:



Composition:

$M_n \times 10^3$ (g/mol)	47.0–b–22.0
M_w/M_n	1.24
Molar ratio MMA : nBuMA	51 : 49 (mol%)
Weight ratio MMA : nBuMA	42 : 58 (wt%)
Molar ratio MMA : nBuMA : HEMA	
T_{g1} (MMA _n BuMA)	70 °C
T_{g2} (HEMA)	107 °C

Synthesis Procedure:

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

Solubility:

The polymer is soluble in THF and DMF.

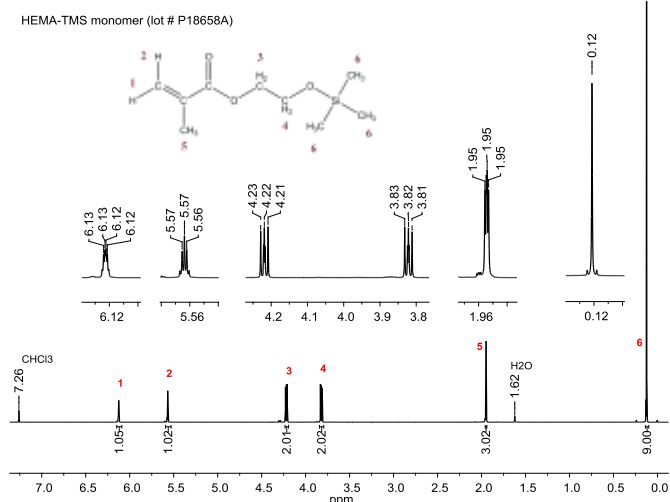
Characterization:

The polymer composition was determined by ^1H NMR. MMA:nBuMA molar ratio was calculated by comparing the peak area of nBuMA - OCH_2 - protons at 3.9 ppm and the peak area of MMA - OCH_3 protons at 3.6 ppm. Molecular weight of the second (HEMA) block was calculated by comparing the peak area of HEMA - $\text{OCH}_2\text{CH}_2\text{O}$ - protons and the peak area of nBuMA - OCH_2 - protons and using SEC data for the first (MMA_nBuMA) block.

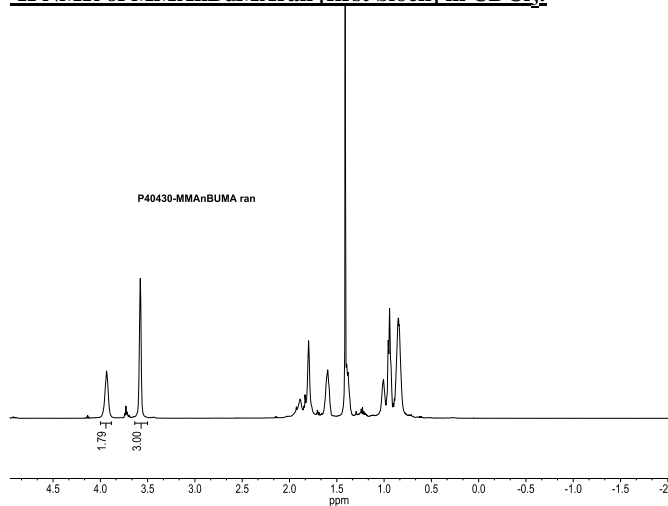
The average molecular weight and polydispersity index of the polymer were determined by size exclusion chromatography (SEC) using DMF (0.023 M LiBr in DMF) as an eluent.

Thermal analysis was performed on TA Instruments Q100 differential scanning calorimeter (DSC) under a nitrogen atmosphere. The glass transition temperature (T_g) of the polymer was measured at a scan rate of 10°C/min shortly after creating thermal history of the sample.

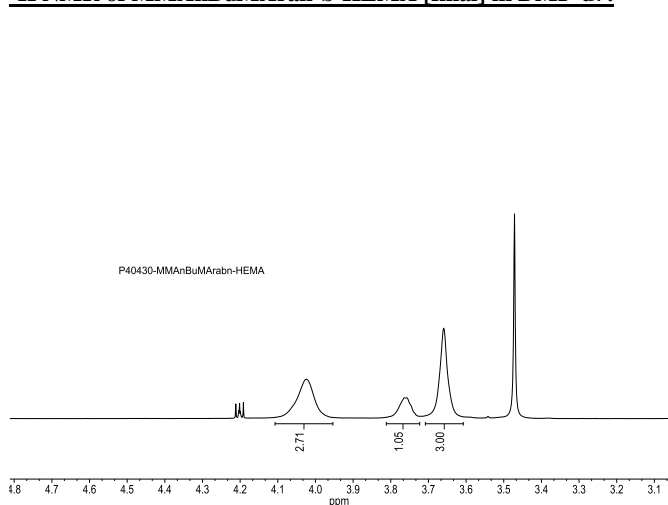
^1H NMR of HEMA-TMS monomer (500 MHz, CDCl_3):



^1H NMR of MMA_nBuMA_{ran} [first block] in CDCl_3 :



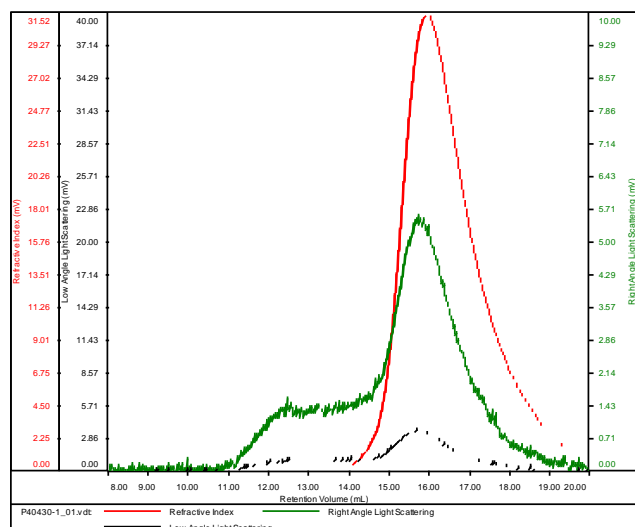
^1H NMR of MMA_nBuMA_{ran}-b-HEMA [final] in DMF-d_7 :



SEC elugram of MManBuMAran [first block] in DMF:

P40430 MManBUMAran

Conc (mg/mL)	6.1844
dn/dc (mL/g)	0.0650
Method	PS80k_December-2016-0004.vcm
Solvent	DMF w 0.023M LiBr
Column	PSS

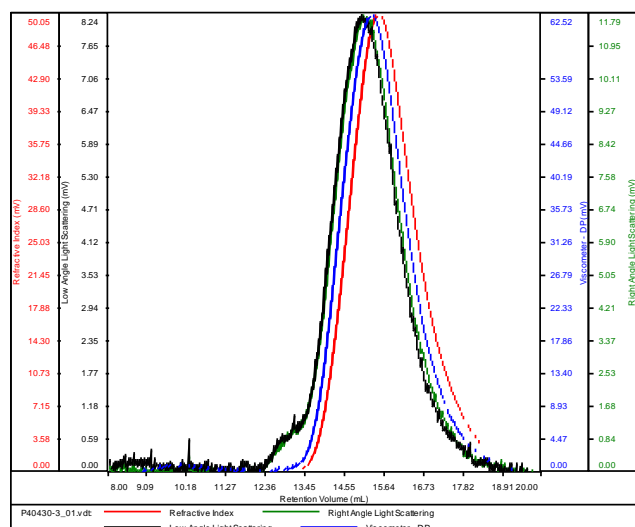


Sample	Mn	Mw	Mp	Mw/Mn	IV
P40430-1_01.vdt	47,240	58,001	56,364	1.228	0.1112

SEC elugram of MManBuMAran-HEMA in DMF:

P40430 MManBUMAran-HEMA

Conc (mg/mL)	10.3216
dn/dc (mL/g)	0.0650
Method	PS80k_December-2016-0004.vcm
Solvent	DMF w 0.023M LiBr
Column	PSS

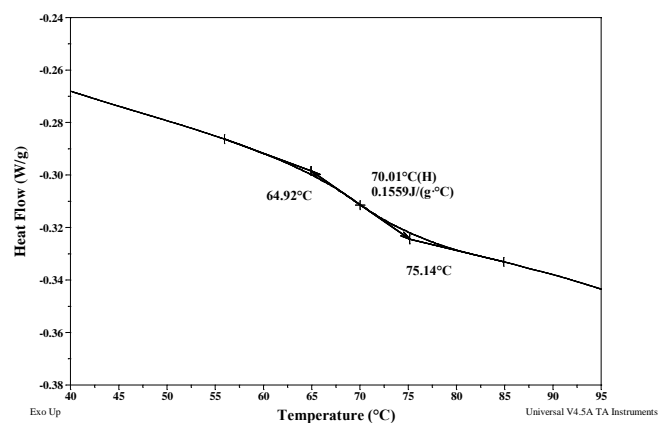


Sample	Mn	Mw	Mp	Mw/Mn	IV
P40430-3_01.vdt	69,611	86,393	79,039	1.241	0.1447

DSC thermogram of MManBuMA-b-HEMA diblock copolymer (2nd heating scan, 10°C/min):

Size: 14.1000 mg

DSC



Size: 14.1000 mg

DSC

