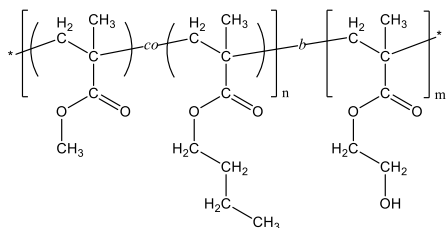


**Sample Name:** Poly(methyl methacrylate-*co*<sub>(random)</sub>-n-butyl methacrylate) -*block*-poly(2-hydroxyethyl methacrylate)

**Sample #:** P10610C-MMA<sub>n</sub>BuMA<sub>r</sub>an-b-HEMA

**Structure:**



**Composition:**

$M_n \times 10^3$ (g/mol)	41.5- <i>b</i> -24.5
$M_n \times 10^3$ (g/mol) (MMA- <i>co</i> -nBuMA)- <i>b</i> -HEMA	(17.0- <i>co</i> -24.5)- <i>b</i> -24.5
$M_w/M_n$	1.64

Molar ratio MMA : nBuMA	50 : 50 (mol/mol)
Weight ratio MMA:nBuMA:HEMA	26 : 37 : 37 (wt%)

**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 (n-BuMA) were co-polymerized; and then 2-[trimethylsilyloxy]ethyl methacrylate (hydroxyprotected 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 and DMF.

**Characterization:**

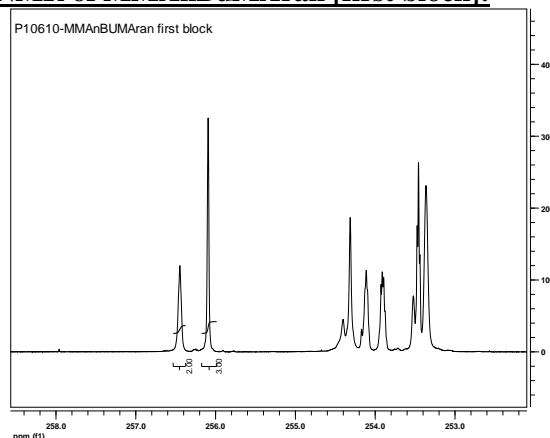
The polymer composition was determined by  $^1\text{H}$  NMR. MMA:nBuMA molar ratio was calculated by comparing the integration of the -OCH<sub>2</sub>- protons of nBuMA (at  $\delta = 3.9$  ppm) to the integration of methoxy group of MMA (at  $\delta = 3.6$  ppm).

The average molecular weight and polydispersity index were determined by size exclusion chromatography (SEC). For SEC analysis, the MMA<sub>n</sub>BuMA-b-HEMA block copolymer can be treated with acetic anhydride in presence of pyridine to convert the hydroxy-groups to acetate groups.

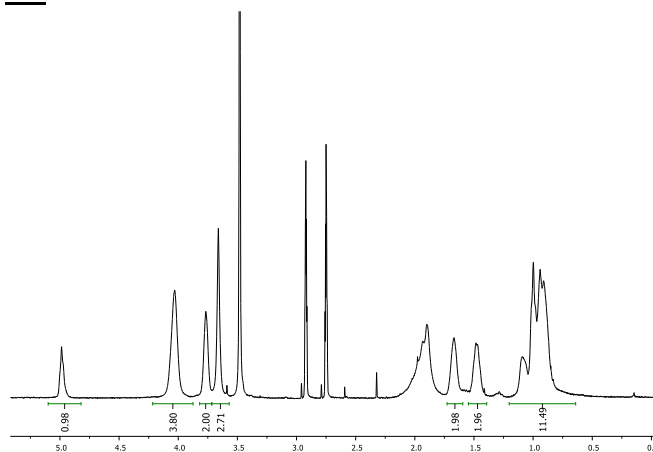
Thermal analysis of the sample was done on a TA Q100 differential scanning calorimeter (DSC) at a

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.

**$^1\text{H}$  NMR of MMA<sub>n</sub>BuMA<sub>r</sub>an [first block]:**



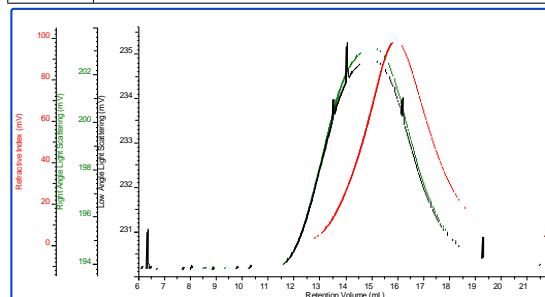
**$^1\text{H}$  NMR of MMA<sub>n</sub>BuMA<sub>r</sub>an-b-HEMA in DMF-d<sub>7</sub>:**



**SEC elugram of MMA<sub>n</sub>BuMA<sub>r</sub>an-b-HEMA:**

P10610C

dn/dc	0.0650
Flow	0.7000
Solvent	DMF with LiBr
Method	PSS column-PMMA60K-Jan3-2019-0002.vcm



Sample	Mn	Mw	Mz	IV	Mw/Mn
P10610C_1_2	65,993	108,504	290,252	0.2658	1.644