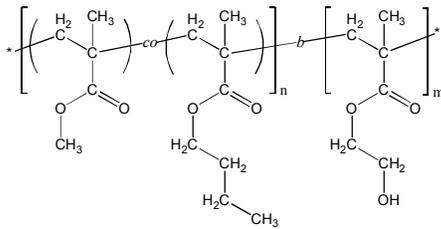


## Sample Name:

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

## Sample #: P10856-MMA*n*BuMA*r*an-*b*-HEMA

### Structure:



### Composition:

$M_n \times 10^3$ (g/mol)	22.5- <i>b</i> -13.0
$M_w/M_n$	1.15
Molar ratio MMA : nBuMA	48 : 52 (mol/mol)
Weight ratio MMA:nBuMA:HEMA	25 : 38 : 37 (wt%)
$T_g$ (MMA <i>n</i> BuMA)	65 °C
$T_g$ (HEMA)	112 °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 (*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, DMF.

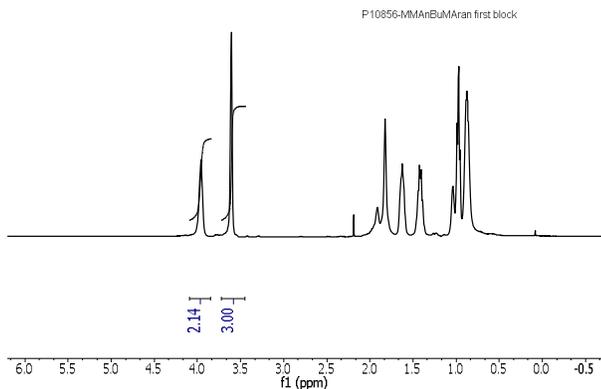
### Characterization:

The polymer composition was determined by  $^1\text{H}$  NMR. MMA:nBuMA molar ratio was calculated by comparing the integration of the  $-\text{OCH}_2-$  protons of nBuMA (at  $\delta = 3.9$  ppm) to the integration of methoxy group of MMA (at  $\delta = 3.6$  ppm). Molecular weight of the second (HEMA) block was calculated by comparing the integration of  $-\text{OCH}_2-$  protons of HEMATMS to the integration of methoxy group of MMA and using SEC data for the first (MMA*n*BuMA) block.

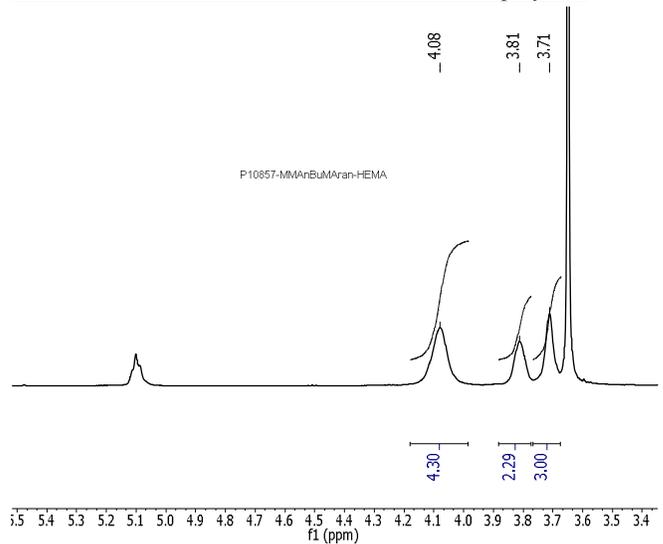
The average molecular weight and polydispersity index were determined by size exclusion chromatography (SEC). For SEC analysis, the MMA*n*BuMA-*b*-HEMA block copolymer can be treated with acetic anhydride in presence of pyridine to convert the hydroxy-groups to acetate groups.

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*n*BuMA*r*an [first block]:



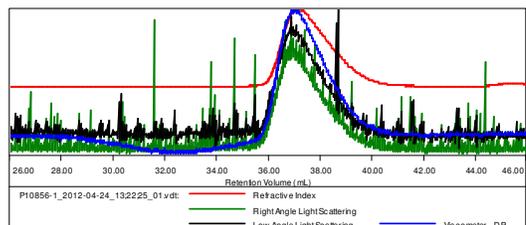
### $^1\text{H}$ NMR of MMA*n*BuMA*r*an-*b*-HEMA diblock copolymer:



### SEC of MMA*n*BuMA*r*an [first block]:

Sample ID: P10856-I-MMA*n*BuMA

Concentration (mg/mL)	6.3577
Sample dn/dc (mL/g)	0.0800
Method File	PS80-APR2012-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn (Da)	Mw (Da)	Mp (Da)	Mw/Mn	IV (dL/g)
P10856-1_2012-04-24_13:22:25_01.vdt	22,269	24,067	22,843	1.081	0.1555

