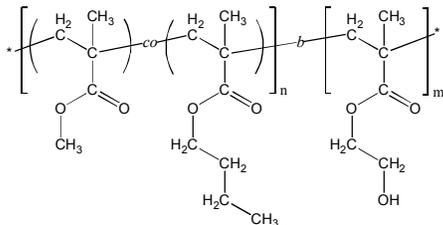


Sample Name:

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

Sample #: P18660-MMA*n*BuMA*r*an-*b*-HEMA

Structure:



Composition:

$M_n \times 10^3$ (g/mol)	29.5- <i>b</i> -33.5
M_w/M_n	1.4
Molar ratio MMA : nBuMA	67 : 33 (mol/mol)
Weight ratio MMA:nBuMA:HEMA	28 : 19 : 53 (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, DMF.

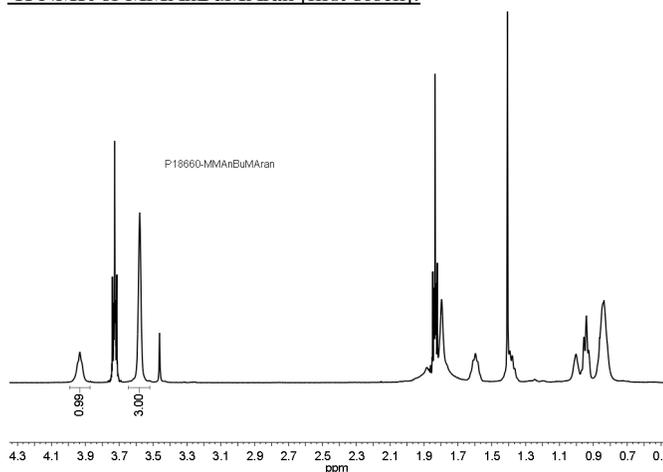
Characterization:

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.

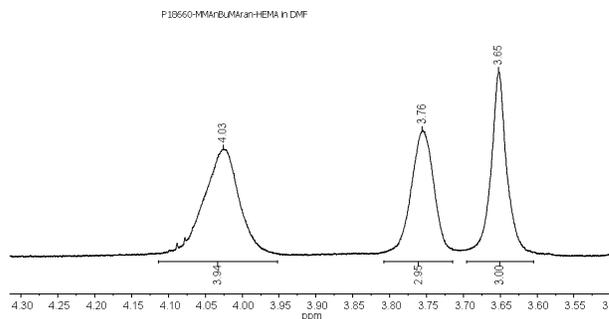
The average molecular weight and polydispersity index were determined by size exclusion chromatography (SEC). For SEC analysis, the MMA*n*BuMA-*b*-HEMA block copolymer can be treated with acetic anhydride in presence of pyridine to convert the hydroxy-groups to acetate groups.

Thermal analysis of the sample was done on a TA Q100 differential scanning calorimeter (DSC) at a heating rate of $10^\circ\text{C}/\text{min}$. 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]:



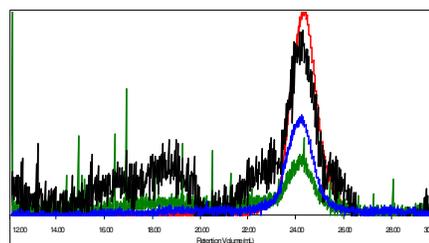
$^1\text{H NMR}$ of MMA*n*BuMA*r*an-*b*-HEMA in DMF-*d*7:



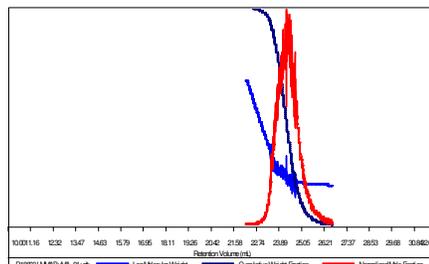
SEC of MMA*n*BuMA*r*an [first block]:

Sample ID: P18660-MMA*n*BuMA*r*an

Concentration (mg/mL)	1.6324
Sample dn/dc (mL/g)	0.0940
Method File	PS80K-Apr15-2014-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



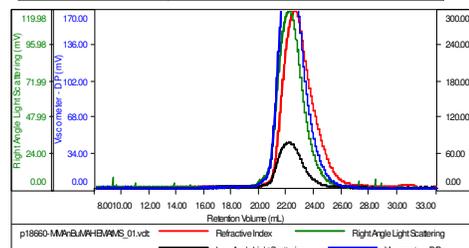
Sample	Mn	Mw	Mp	Mw/Mn	IV
P18660-MMA-nBuMA-01.vct	29,765	33,089	29,089	1.111	0.0720



SEC of MMA*n*BuMA*r*an-*b*-HEMATMS:

Sample ID: P18660-MMA*n*BuMA*r*an-HEMATMS

Concentration (mg/mL)	55.7246
Sample dn/dc (mL/g)	0.0700
Method File	PS80K-0923-2014-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
p18660-MMA-nBuMA-ran-HEMATMS-01.vct	69,372	100,459	110,680	1.439	0.1646