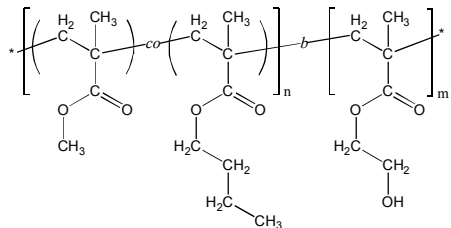


**Sample Name:**

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

**Sample #: P11489-MMA<sub>n</sub>BuMA<sub>r</sub>an-b-HEMA****Structure:****Composition:**

$M_n \times 10^3$ (g/mol)	27.0-37.0
$M_w/M_n$	1.15
Molar ratio MMA : nBuMA	75 : 25 (mol/mol)
Weight ratio MMA:nBuMA:HEMA	29 : 14 : 58 (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.

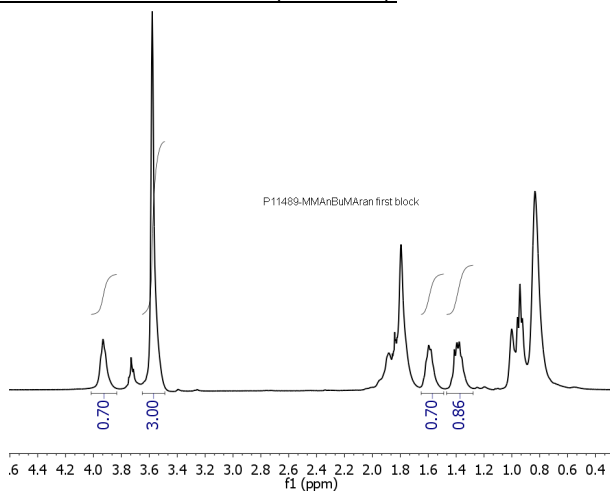
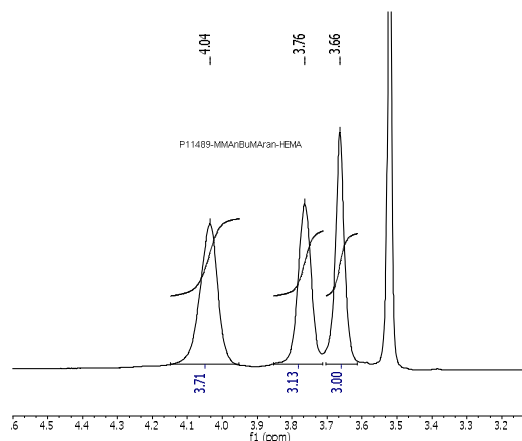
**Solubility:** The polymer is soluble in THF, DMF.

**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 HEMA to the integration of methoxy group of MMA and using SEC data for the first (MMA<sub>n</sub>BuMA) block.

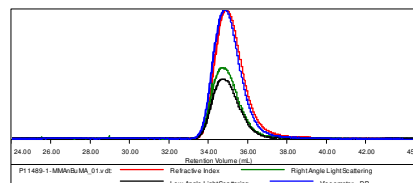
The average molecular weight and polydispersity index were determined by size exclusion chromatography (SEC). For SEC analysis, the MMA<sub>n</sub>BuMA-b-HEMA block copolymer can be treated with acetic anhydride in presence of pyridine to convert the hydroxy-groups to acetate groups.

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

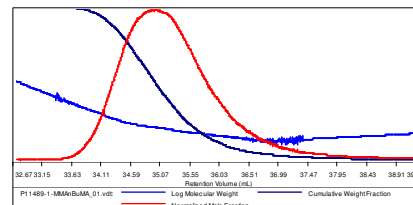
 **$^1\text{H}$  NMR of MMA<sub>n</sub>BuMA<sub>r</sub>an [first block]:** **$^1\text{H}$  NMR of MMA<sub>n</sub>BuMA<sub>r</sub>an-b-HEMA diblock copolymer:****SEC of MMA<sub>n</sub>BuMA<sub>r</sub>an [first block]:**

Sample ID: P11489-1-MMA<sub>n</sub>BuMA

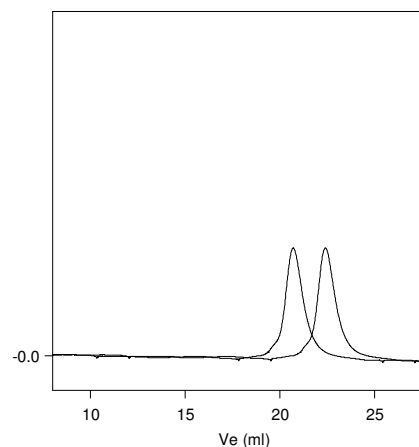
Concentration (mg/mL)	14.6582
Sample divide (mL/g)	0.0800
Method File	PS60K-May-2013-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn	Mw	Mp	Mw/Mn	IV
P11489-1-MMA <sub>n</sub> BuMA_01.vdt	26,832	28,272	28,434	1.054	0.3226

**SEC of MMA<sub>n</sub>BuMA<sub>r</sub>an and MMA<sub>n</sub>BuMA<sub>r</sub>an-b-HEMATMS:**

P11489-MMA<sub>n</sub>BuMA<sub>r</sub>an-b-HEMA



Size exclusion chromatography of  
 1. MMA<sub>n</sub>BuMA<sub>r</sub>an block Mn 27,000 Mw/Mn 1.05  
 2. MMA<sub>n</sub>BuMA<sub>r</sub>an-b-HEMATMS: 27,000-57,500 MW/Mn : 1.15  
 After deprotection Mn 27,000-b-37,000 Mw/Mn 1.15