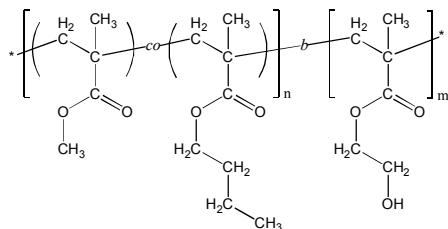


**Sample Name:**

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

**Sample #: P10579-MMAAnBuMAran-b-HEMA****Structure:****Composition:**

$M_n \times 10^3$ (g/mol)	13.5- <i>b</i> -15.0
$M_w/M_n$	1.19
Molar ratio MMA : nBuMA	55 : 45 (mol/mol)
Weight ratio MMA:nBuMA:HEMA	22 : 25 : 53 (wt%)
$T_g$ (MMAAnBuMA)	65 °C
$T_g$ (HEMA)	112 °C

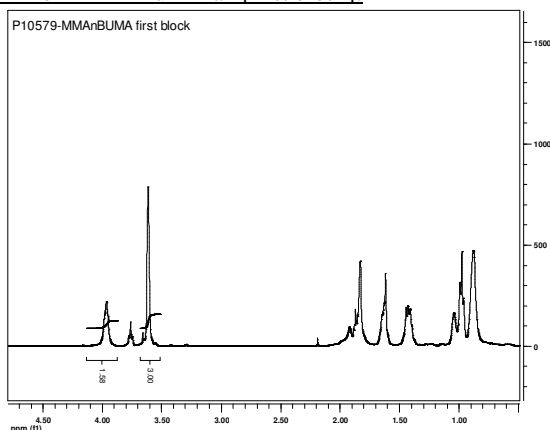
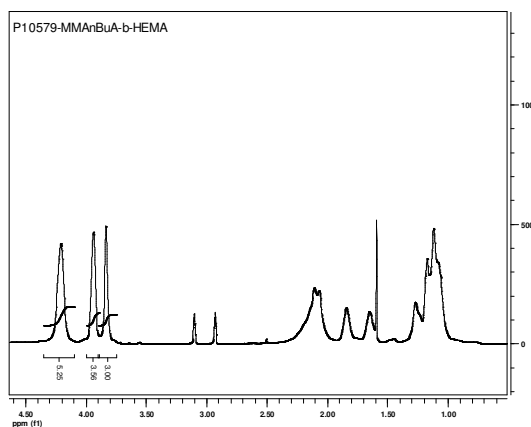
**Synthesis Procedure:**

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.

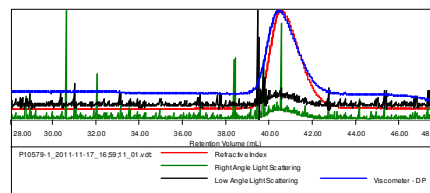
**Characterization:**

The polymer composition was calculated by  $^1\text{H}$  NMR. MMA:nBuMA molar ratio was calculated by comparing the peak area of nBuMA -OCH<sub>2</sub>- protons at 3.9 ppm and the peak area of MMA -OCH<sub>3</sub> protons at 3.6 ppm. Molecular weight of the second (HEMA) block was calculated by comparing the peak area of HEMA -OCH<sub>2</sub>CH<sub>2</sub>O- protons and the peak area of nBuMA -OCH<sub>2</sub>- protons and using SEC data for the first (MMAAnBuMA) block. The average molecular weight and polydispersity index were determined by size exclusion chromatography (SEC). For SEC analysis, the MMAAnBuMA-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.

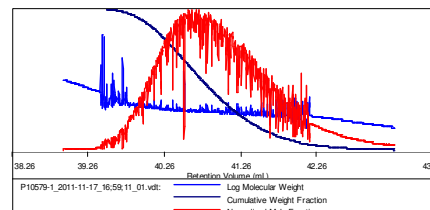
 **$^1\text{H}$  NMR of MMAAnBuMAran [first block]:** **$^1\text{H}$  NMR of MMAAnBuMAran-b-HEMA diblock copolymer:****SEC of MMAAnBuMAran [first block]:**

Sample ID: P10579-I-MMAAnBuMA

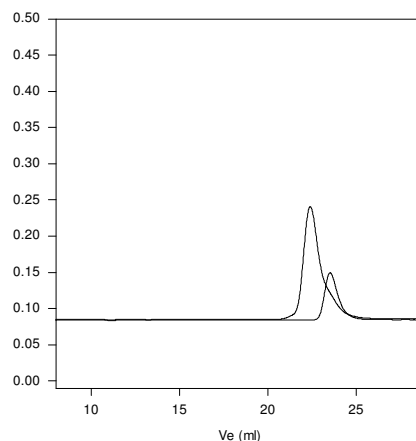
Concentration (mg/mL)	11.7200
Sample dn/dc (mL/g)	0.0800
Method File	PS80K-Oct-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn (Da)	Mw (Da)	Mp (Da)	Mw/Mn	IV (dL/g)
P10579-1_2011-11-17_16:59:11_01.vdt	13,476	16,342	13,548	1.213	0.1398

**SEC of MMAAnBuMAran and MMAAnBuMAran-b-HEMATMS:**

P10579-MMAAnBuMAranHEMA



Size exclusion chromatography of  
 1. Poly MMAAnBuMAran: Mn 13,500 Mw: 16,000 Mw/Mn 1.2  
 Poly MMAAnBuMAran-b-HEMATMS: Mn 13,500 -b-23,300 Mw/Mn 1.19  
 After Deprotection : MMAAnBuMAran-b-HEMA Mn 13,500-b-15,000  
 It shows no micellization in THF