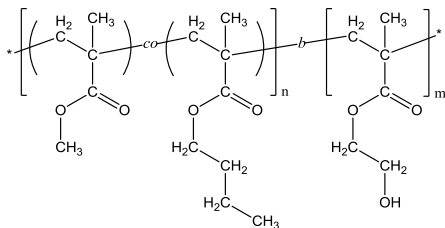


Sample Name:

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

Sample #: P40400-MMA<sub>n</sub>BuMA<sub>r</sub>an-b-HEMA

Structure:



Composition:

$M_n \times 10^3$ (g/mol)	52.0- <i>b</i> -29.0
$M_w/M_n$	1.25
MMA : nBuMA	51:49 (mol/mol)
MMA : nBuMA	42:58 (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.

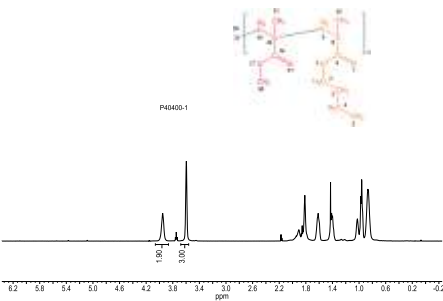
Solubility:

The polymer is soluble in THF, DMF.

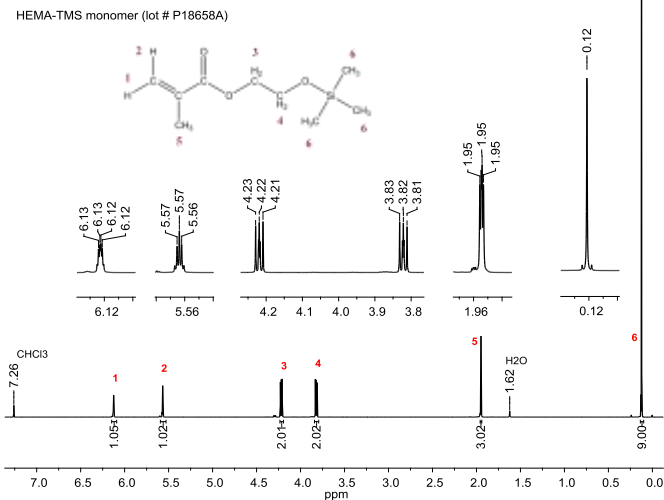
Characterization:

The polymer composition was determined by <sup>1</sup>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 (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°C/min. The glass transition temperature (T<sub>g</sub>) was determined as a midpoint of step change in heat flow curve for the second heating scan.

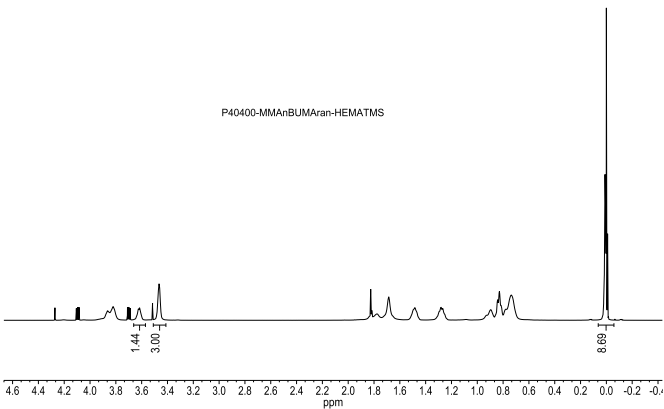
<sup>1</sup>H NMR of MMA<sub>n</sub>BuMA [first block]:



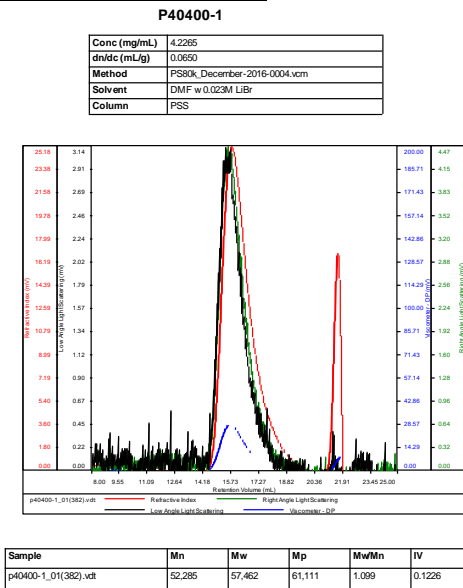
<sup>1</sup>H NMR of HEMATMS monomer (500 MHz, CDCl<sub>3</sub>):



<sup>1</sup>H NMR of MMA<sub>n</sub>BuMA-b-HEMATMS:



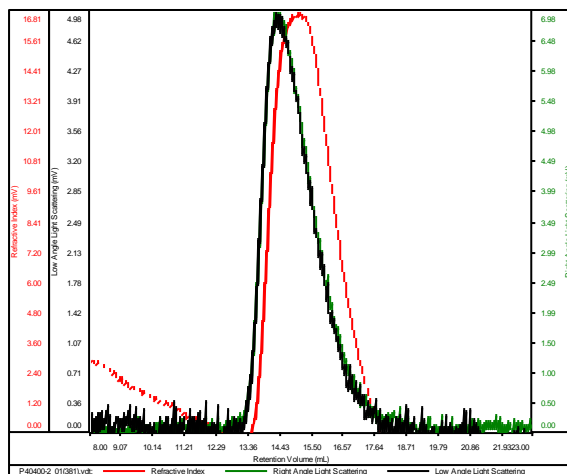
SEC of MMA<sub>n</sub>BuMA [first block]:



## SEC of MManBuMA-b-HEMATMS:

### P40400-MManBUMA-HEMATMS

Conc	2.7222
dn/dc	0.0600
Solvent	DMF w 0.023M LiBr
Flow Rate	0.7000
Method	PS80k_August-2017-0000.vcm



Sample	Mn	Mw	Mp	Mw/Mn	IV
P40400-2_01(381).vdt	97,824	117,747	112,298	1.204	0.2597