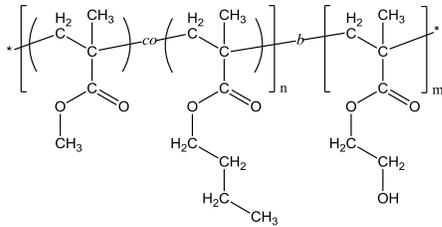


Sample Name:

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

Sample #: **P40400-MMA*n*BuMA*r*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.

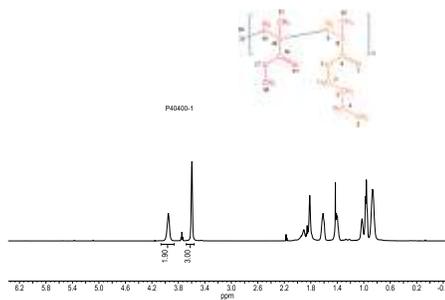
Characterization:

The polymer composition was determined by ¹H NMR. MMA:nBuMA molar ratio was calculated by comparing the peak area of nBuMA -OCH₂- protons at 3.9 ppm and the peak area of MMA -OCH₃ protons at 3.6 ppm. Molecular weight of the second (HEMA) block was calculated by comparing the peak area of HEMA -OCH₂CH₂O- protons and the peak area of nBuMA -OCH₂- protons and using SEC data for the first (MMA*n*BuMA) block.

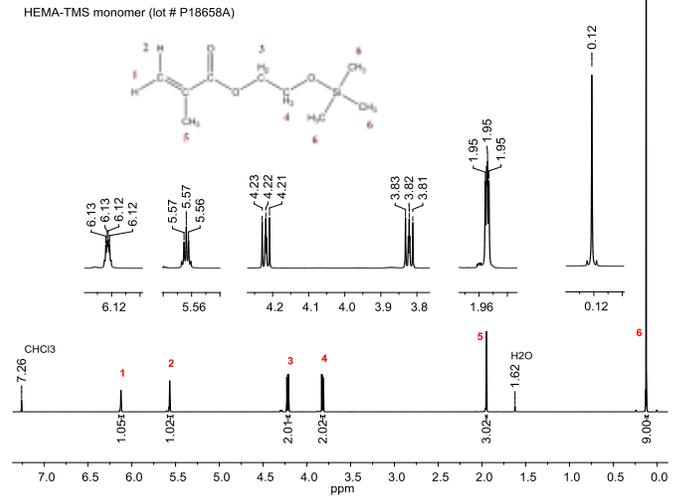
The average molecular weight and polydispersity index were determined by size exclusion chromatography (SEC). For SEC analysis, the MMA*n*BuMA-*b*-HEMA block copolymer can be treated with acetic anhydride in presence of pyridine to convert the hydroxy-groups to acetate groups.

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.

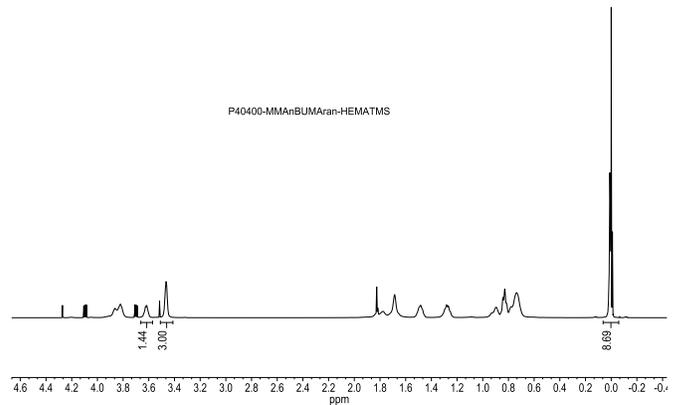
¹H NMR of MMA*n*BuMA [first block]:



¹H NMR of HEMATMS monomer (500 MHz, CDCl₃):



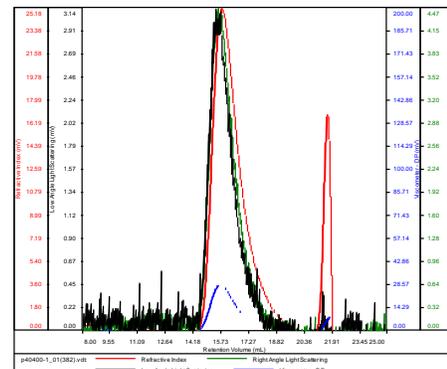
¹H NMR of MMA*n*BuMA-*b*-HEMATMS:



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

P40400-1

Conc (mg/mL)	4.2285
dn/dc (mL/g)	0.0650
Method	PSStk_December-2016-0004.vcm
Solvent	DMF w/0.023M LiBr
Column	PSS

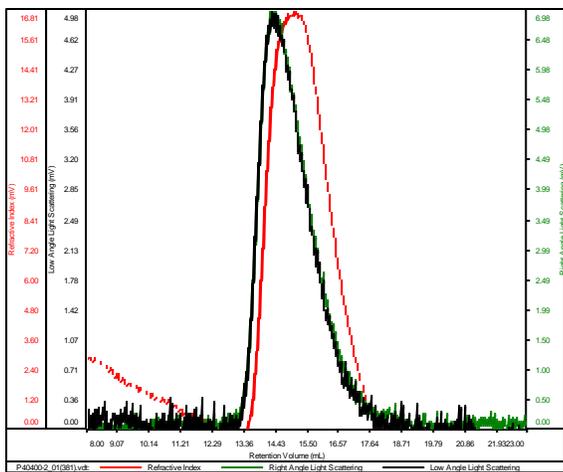


Sample	Mn	Mw	Mp	Mw/Mn	IV
p40400-1_01(382).vcl	52,285	57,462	61,111	1.099	0.1226

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