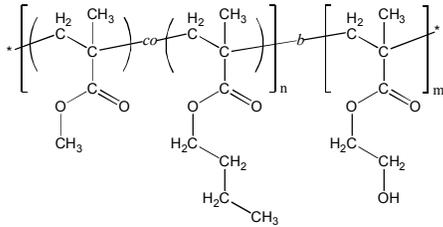


Sample Name:

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

Sample #: P9327-MMA_nBuMA_ran-b-HEMA

Structure:



Composition:

$M_n \times 10^3$ (g/mol)	16.0- <i>b</i> -7.0
M_w/M_n	1.3
Molar ratio MMA : nBuMA	65 : 35 (mol/mol)
Weight ratio MMA:nBuMA:HEMA	39 : 30 : 31 (wt%)
T_g (MMA _n BuMA)	75 °C
T_g (HEMA)	118 °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:

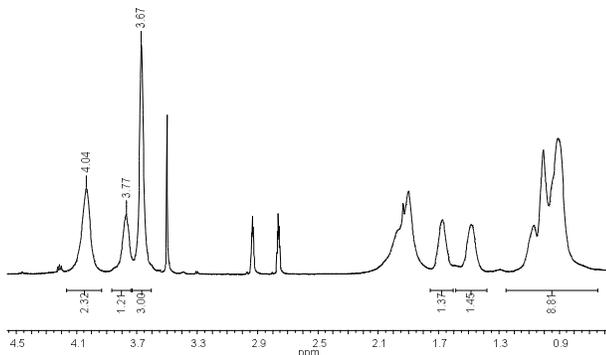
The polymer composition was determined by ¹H NMR. MMA:nBuMA molar ratio was calculated by comparing the integration of the -OCH₂- protons of nBuMA (at $\delta = 3.9$ ppm) to the integration of methoxy group of MMA (at $\delta = 3.6$ ppm). Molecular weight of the second (HEMA) block was calculated by comparing the integration of -OCH₂- protons of HEMATMS to the integration of methoxy group of MMA and using SEC data for the first (MMA_nBuMA) block.

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

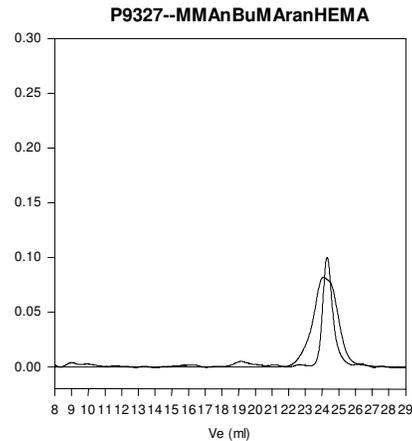
Thermal analysis of the sample was done on a TA Q100 differential scanning calorimeter (DSC) at a heating rate of 10°C/min. The glass transition temperature (T_g) was determined as a midpoint of step change in heat flow curve for the second heating scan.

¹H NMR of MMA_nBuMA_ran-b-HEMA diblock copolymer:

P9327-MMA_nBuMA-HEMA in DMF-d₇



SEC of MMA_nBuMA_ran and MMA_nBuMA_ran-b-HEMATMS:



Size exclusion chromatography of
1. Random copolymer of MMA and nBuMA: M_n 16000 M_w : 17500 M_w/M_n 1.09
Poly(MMA-*n*BuMA_ran)-*b*- Poly 2-Hydroxy ethyl methacrylate (Protected with TMS)
 M_n 16,000-*b*-11,000 M_w/M_n 1.3
After Deprotection of HEMA TMS : M_n 16,000-*b*-7,000 M_w/M_n 1.3

DSC of MMA_nBuMA_ran-b-HEMA:

