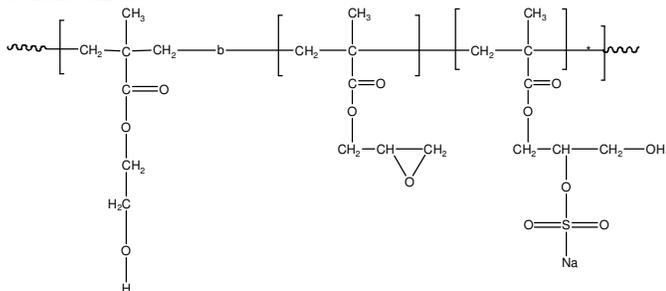


Sample Name:

Poly(n-butyl methacrylate-b-Glycidyl methacrylate-co-Hydroxypropyl methacrylate Sodium salt)

Sample #: P9471A-nBuMAGMAHPMASO3Na

Structure:**Composition:**

Mn × 10 ³ nBuMA-b-GMA-HPMASO ₃ Na	PDI
23.0-b-14.0	1.07
T _g for nBuMA block: 27 °C	T _g for GMA block: 87 °C
% of sulfonation of GMA block to HPMASO ₃ Na ≅ 90%	

Synthesis Procedure:

Poly(n-butyl methacrylate-b-Glycidyl methacrylate) block copolymer is synthesized by living anionic polymerization with sequential addition of n-butyl methacrylate and -Glycidyl methacrylate. The obtained polymer was precipitated in methanol/acidic. The product sulfonated using sodium sulfite/tetra butyl ammonium bromide as surfactant in water/CHCl₃.

Purification of Polymer: After the sulfonation the obtained emulsion was Filter. Chloroform was removed under vacuum and the Emulsion was dialysed for 2 days using 2000 Mol. Cut membrane. The product was Filter and freeze dried from water. There is a fraction of polymer that is insoluble was separated by filtration.

% of sulfonation can be determined from HNMR of the polymer taken in DMF. The disappearance of Chemical shifts at 2.6 ppm and appearance of -CH₂OH at 3.76ppm after the sulfonation.

Characterization:

SEC analysis of the obtained block copolymer in THF in presence of triethyl amine as eluent .

The final block copolymer composition by ¹H-NMR spectroscopy in CdCl₂ Block copolymer PDI is determined by SEC.

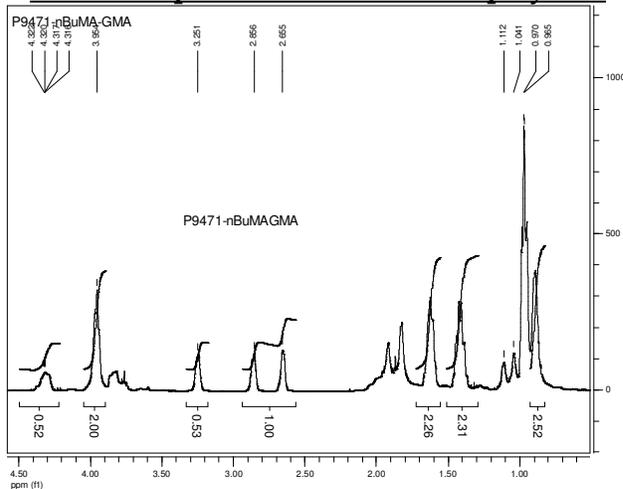
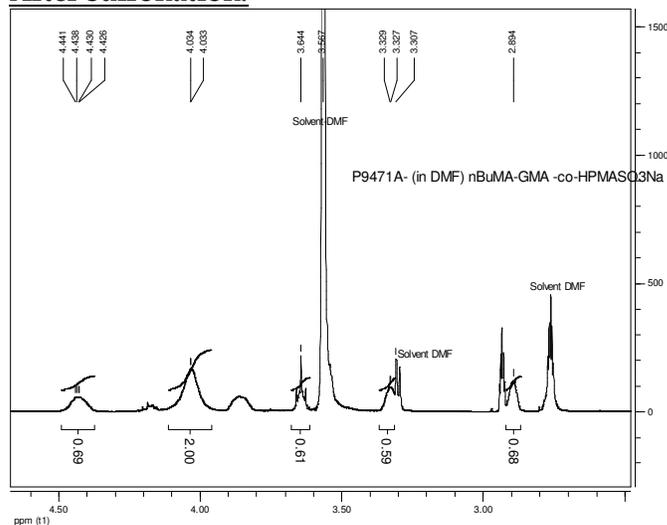
Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

Solvent	Comments
DMF	Soluble
Acetone	Soluble
Acetone/methanol	Soluble
Water	Insoluble

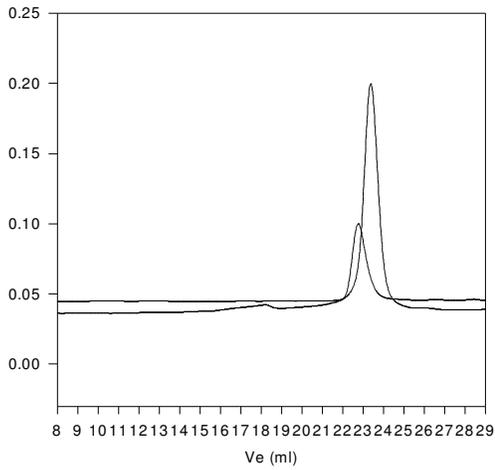
Polymer is soluble in DMF or DMF/water.

¹H-NMR Spectrum of the block copolymer:**After sulfonation:**

SEC of the block copolymer used for Sulfonation reaction:

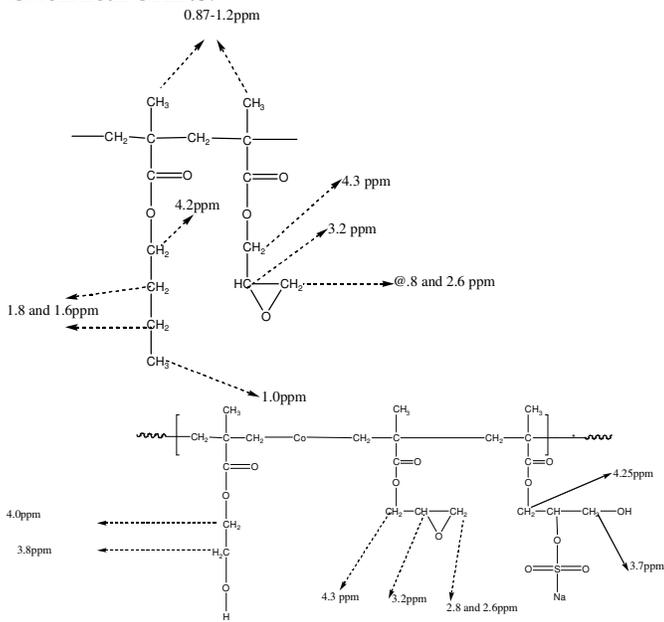
reaction:

P9471--nBuMAGMA



Size exclusion chromatography of
1. Poly nBuMA: Mn 23000 Mw: 24800 Mw/Mn 1.08
Poly(nBuMA)-b- Poly (GMA) Mn 23,000-b-8000 Mw/Mn 1.07

Chemical Shifts:



DSC thermogram for the starting polymer:

