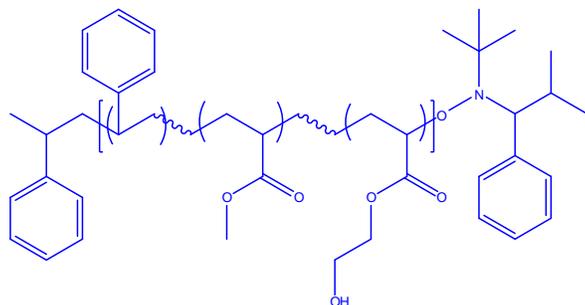


Sample Name:

Random Copolymer Poly(styrene-co-methyl methacrylate-co-hydroxyethyl methacrylate)

Sample #: P5709-SMMAHEMAran

Structure:



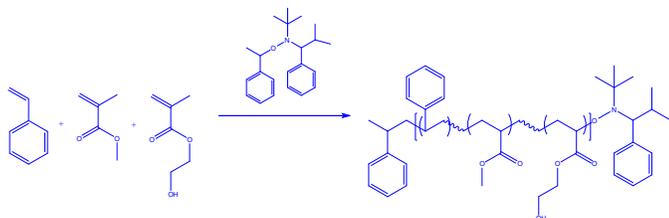
Composition:

PS (mol%) : 62%, HEMA: 4%

$M_n \times 10^3$ S-co-MMA-co-HEMA	PDI
30.0	1.20
T_g for the random copolymer	89°C

Synthesis Procedure:

Random Copolymer is prepared by nitroxide-mediated radical polymerization of styrene, HEMA and MMA.



Characterization:

The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from $^1\text{H-NMR}$ spectroscopy by comparing the peak area the aromatic protons at 6.66-7.05 ppm with the protons of methyl methacrylate at about 0.8-3.8 ppm that deducts the contribution of the styrene back bone protons.

Thermal analysis:

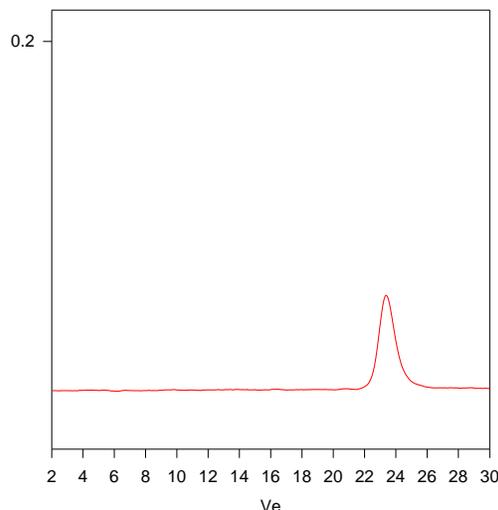
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

Random Copolymer Poly(styrene-co-MMA-co-HEMA) is soluble in CHCl_3 , THF, DMF, toluene and precipitated out from methanol.

SEC of the random copolymer:

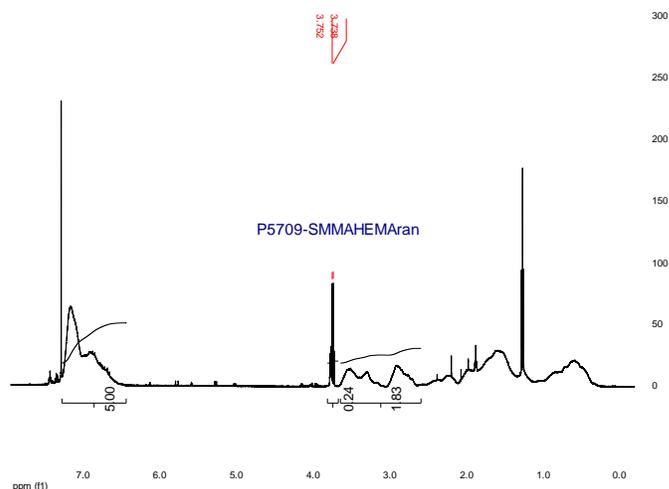
P5709-SMMAHEMAran



Size Exclusion Chromatography of Poly(Styrene-co-MMA-co-HEMA):

$M_n = 30000$, $M_w = 36000$, $M_w/M_n = 1.20$

Proton NMR of copolymer:



DSC thermogram for the sample:

