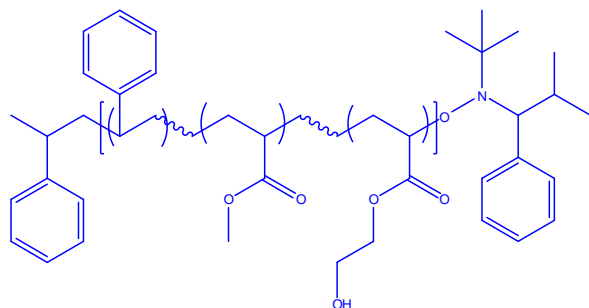


**Sample Name:**

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

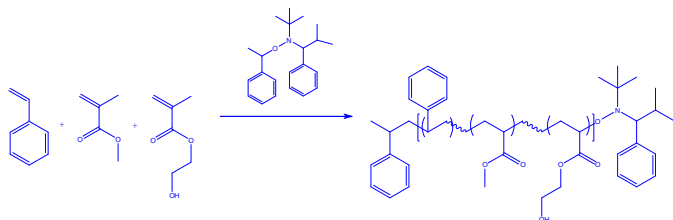
**Sample #: P5709-SMMAHEMAran****Structure:****Composition:**

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:**

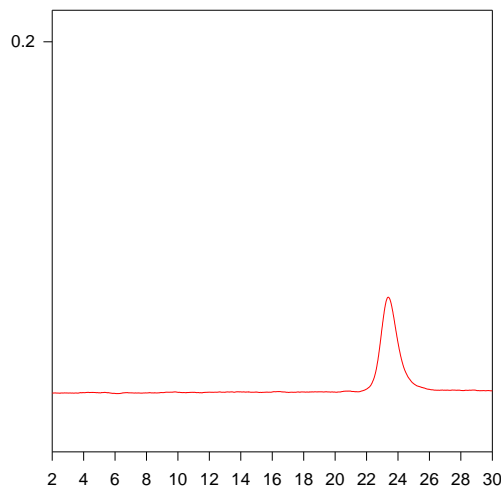
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

**Solubility:**

Random Copolymer Poly(styrene-co-MMA-co-HEMA) is soluble in  $\text{CHCl}_3$ , THF, DMF, toluene and precipitated out from methanol.

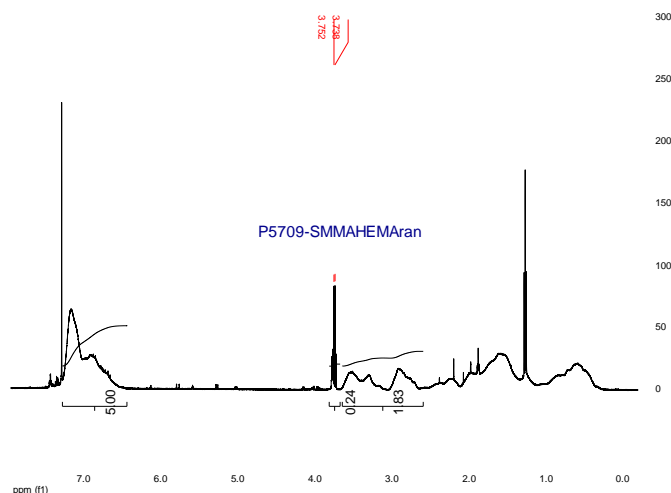
**SEC of the random copolymer:**

**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:**