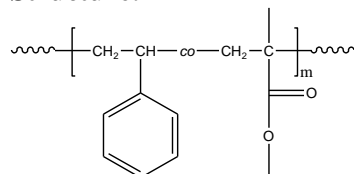


Sample Name: Random Copolymer Poly(styrene-co-methyl methacrylate)

Sample #: P2866-SMMAran

Structure:



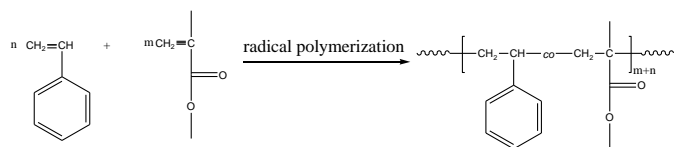
Composition:

PS (mol%) : 63%

$M_n \times 10^3$ PS-co-PMMA	PDI
71.3	1.86
T_g for random polymer	103°C

Synthesis Procedure:

Random Copolymer Poly(styrene-co-methyl methacrylate) is prepared by radical polymerization of styrene and methyl methacrylate in the presence of TEMPO. The scheme of the reaction is illustrated below:



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 of styrene at about 7.05 ppm with the methyl ester protons of methyl methacrylate at about 3.6 ppm.

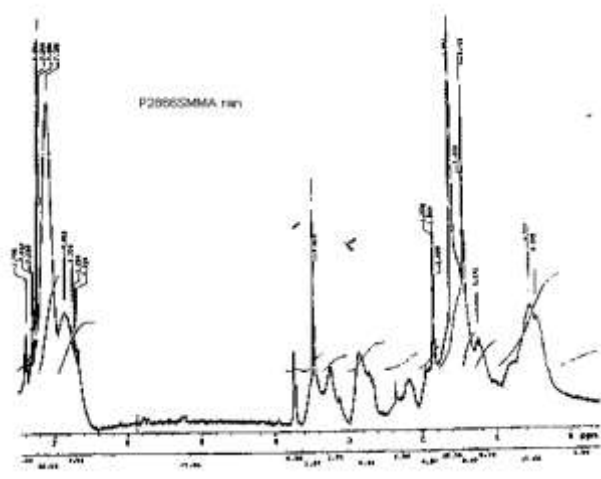
Thermal analysis:

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).

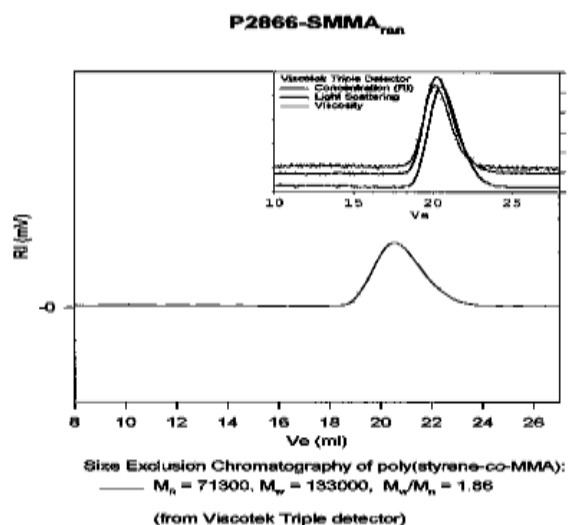
Solubility:

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

$^1\text{H-NMR}$ Spectrum of the random copolymer:



SEC of the random copolymer:



DSC thermogram for the sample:

