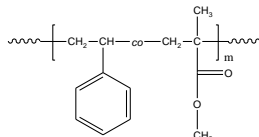


Sample Name: Random Copolymer
Poly(styrene-co-methyl methacrylate)

Sample #: P18607-SMMAran

Structure:

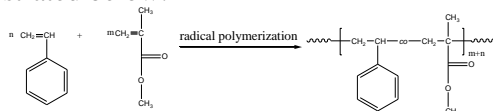


Composition:

Mn x 10 ³ PS-co-PMMA	PDI	Poly styrene: (mol%)
14.0	1.24	80
T _g (°C): 94		

Synthesis Procedure:

Random Copolymer Poly(styrene-co-methyl methacrylate) is prepared by radical polymerization of styrene and methyl methacrylate. 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 ¹H-NMR spectroscopy by comparing the peak area of the aromatic protons of 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 backbone protons.

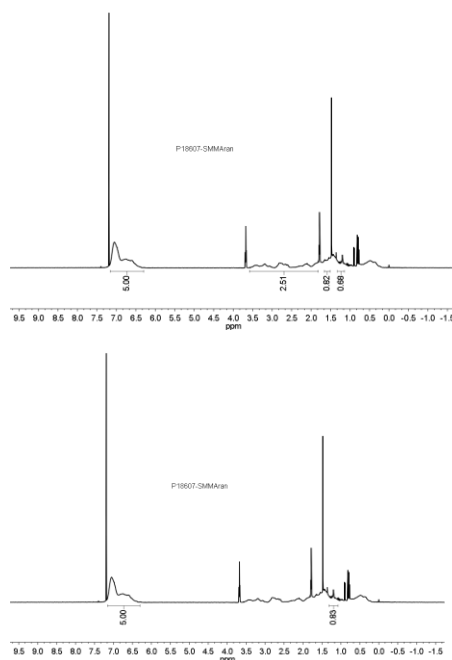
Thermal analysis:

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:

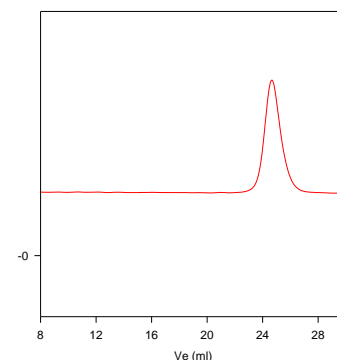
Random Copolymer Poly(styrene-co-methyl methacrylate) is soluble in CHCl₃, THF, DMF, toluene and precipitated out from methanol.

¹H-NMR Spectrum of the random copolymer:



SEC of the random copolymer:

P18607-SMMAran



Size exclusion chromatograph of random copolymer: poly(S-co-MMA):
M_n=14,000, M_w=17,300, M_w/M_n=1.24
Polystyrene content: 76mole% by NMR

DSC thermogram for the random polymer:

