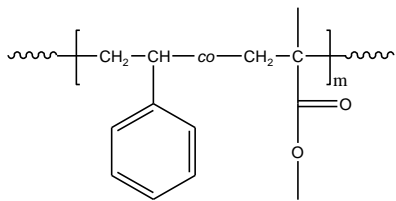


Sample Name:

Random Copolymer Poly(styrene-co-methyl methacrylate)

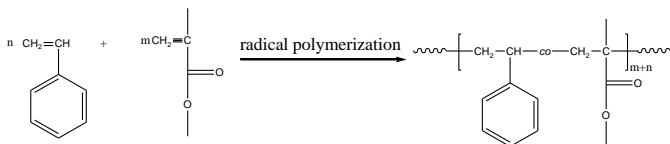
Sample #: P7043-SMMAran**Structure:****Composition:**

PS (mol%) : 51.0

Mn x 10 ³ PS-co-PMMA	PDI
54.4	2.3
T _g for random polymer	107°C

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:**

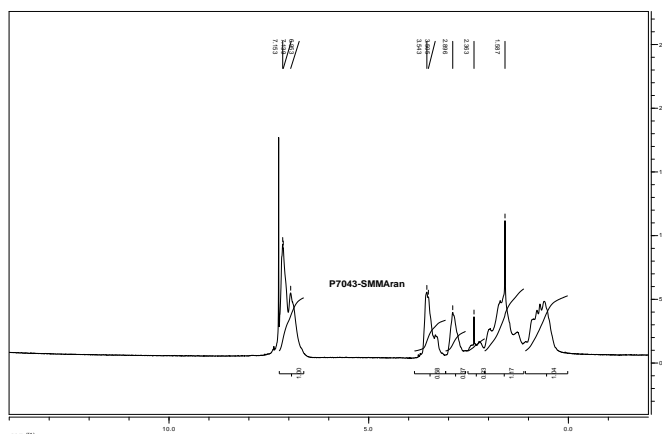
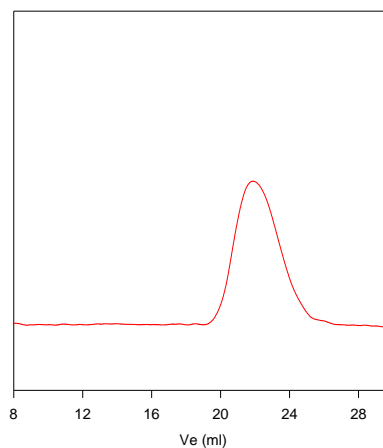
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area the aromatic protons of styrene at about 7.05 ppm with the methyl ester protons of 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 CHCl₃, THF, DMF, toluene and precipitated out from methanol.

¹H-NMR Spectrum of the random copolymer:**SEC of the random copolymer:****P7043-SMMAran**

Size exclusion chromatograph of random copolymer: poly(S-co-MMA):

M_n=54,400, M_w=125,000, M_w/M_n=2.3

Polystyrene content: 51%mol by NMR

DSC thermogram for the sample: