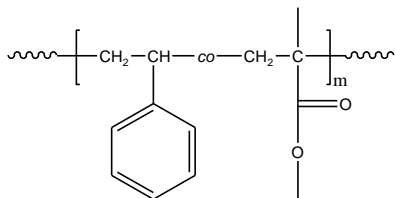


Sample Name:

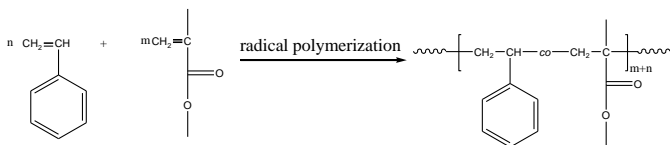
Random Copolymer Poly(styrene-co-methyl methacrylate)

Sample #: P18606-SMMAran**Structure:****Composition:**

Mn x 10 ³ PS-co-PMMA	PDI	PS (mol%)
43.5	2.0	80
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. The scheme of the reaction is illustrated below:

**Characterization:**

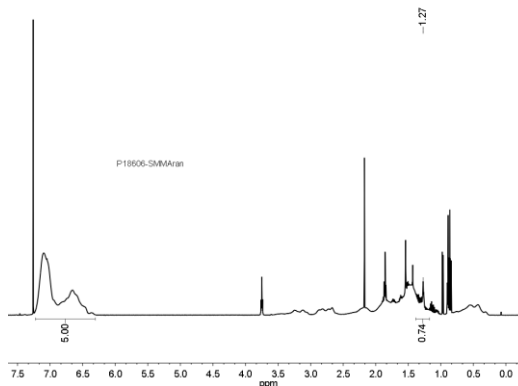
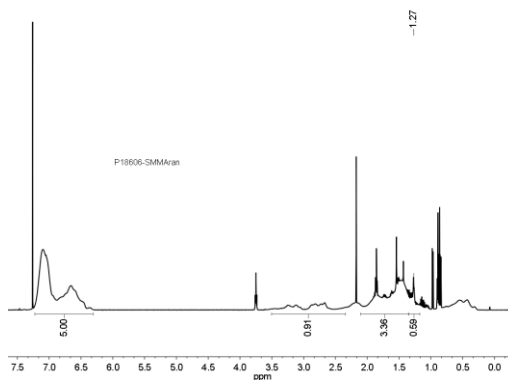
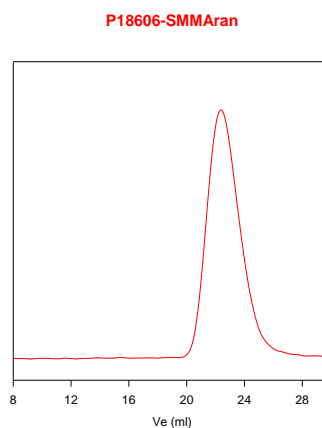
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area the aromatic protons of 6.66-7.05 ppm with the protons of methyl methacrylate at 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-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:**

Size exclusion chromatograph of random copolymer: poly(S-co-MMA):
M_n=43500, M_w=88500, M_w/M_n=2.0
Polystyrene content: 84%mol by NMR

DSC thermogram for the sample: