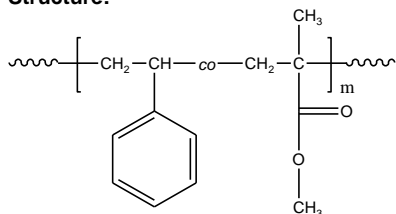<u>Sample Name:</u>
Random Copolymer Poly(styrene-co-methyl methacrylate)

<u>Sample #:</u> **P9128G-SMMAran**
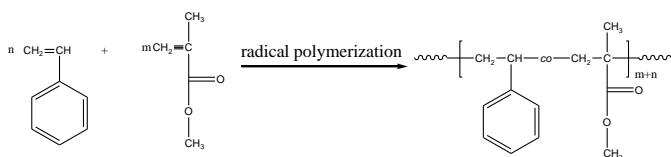
Structure:

Composition:

Poly styrene: (mol%) : 90.0

Mn x 10^3 PS-co-PMMA	PDI
38.0	1.5

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:
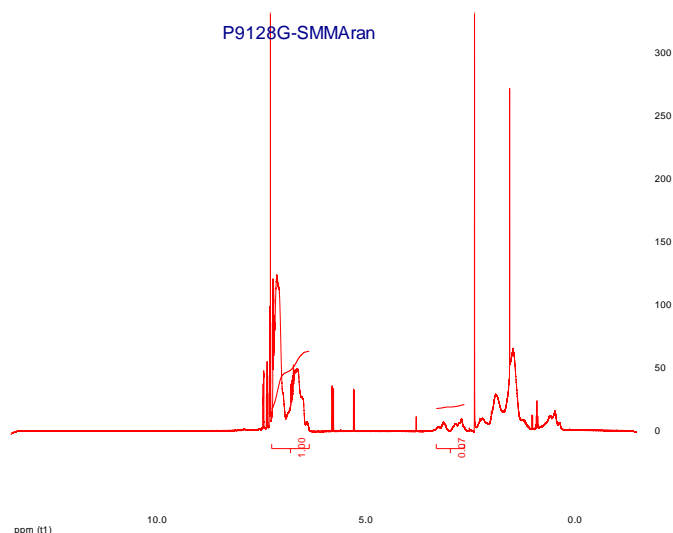

Characterization:

The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ^{1}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.
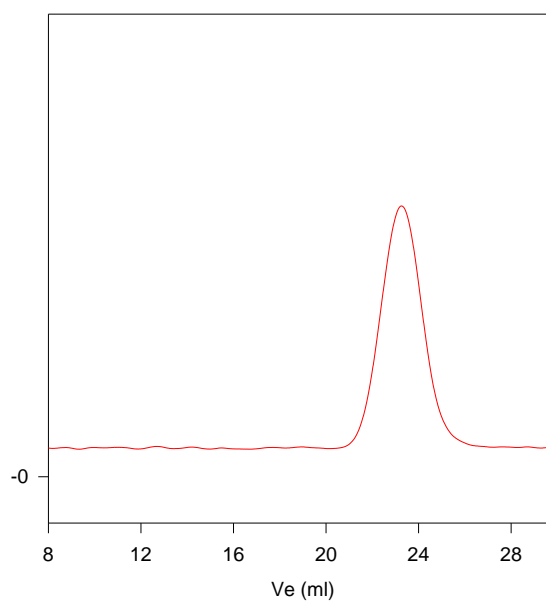
Solubility:

Random Copolymer Poly(styrene-co-methyl methacrylate) is soluble in CHCl$_3$, THF, DMF, toluene and precipitated out from methanol.

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

SEC of the random copolymer:

P9128G-SMMAran

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

M$_n$=38,000, M$_w$=57,000, M$_w$/M$_n$=1.5
Polystyrene content: 90%mol by NMR