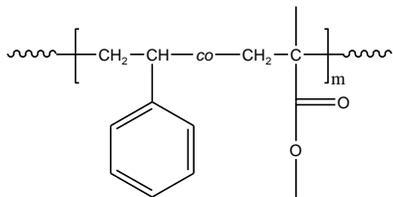


Sample Name:

Random Copolymer Poly(styrene-co-methyl methacrylate)

Sample #: P853-SMMAran

Structure:



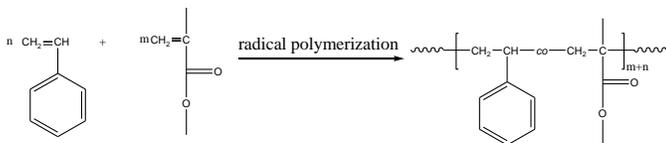
Composition:

PS (mol%): 12

| | |
|---------------------------------------|-------|
| Mn x 10 ³ PS-co-PMMA | PDI |
| 305.1 | 1.83 |
| T _g for the random polymer | 100°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.

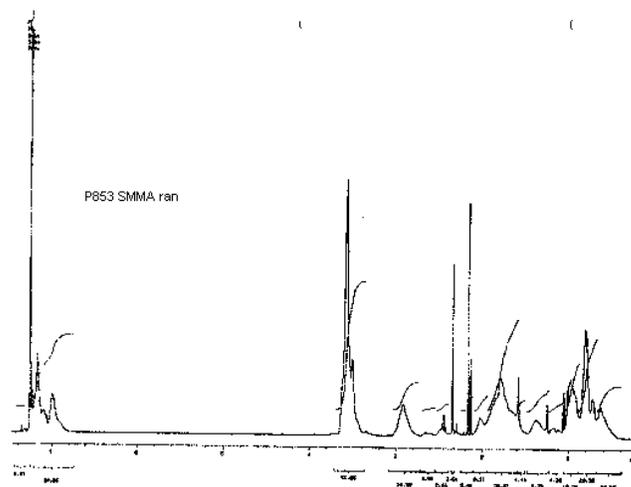
Thermal analysis:

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).

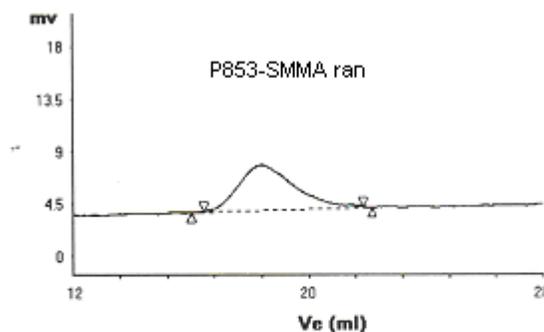
Solubility:

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:



Results of Size Exclusion Chromatography:

Mn= 305100
Mw= 557700
Mz= 873600
PI= 1.83

Thermogram for the sample:

