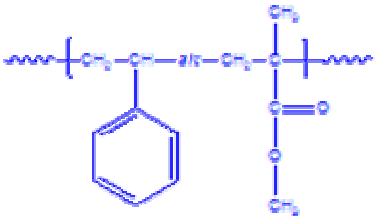
Sample Name:
Alternating Copolymer Poly(styrene-alt- methyl methacrylate)

Sample #: P1603-SMMAalt

Structure:



Composition:

Mn x 10^3 PS-alt-PMMA	PDI
48.5	2.24
T_g for alternating polymer	100°C

Synthesis Procedure:

Poly(styrene-alt- methyl methacrylate) is prepared by free radical polymerization in toluene with BPO as an initiator in the presence of ethyl aluminum sesquichloride.

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 of styrene at about 7.05 ppm with the peak area of methyl methacrylate at 3.6 ppm.

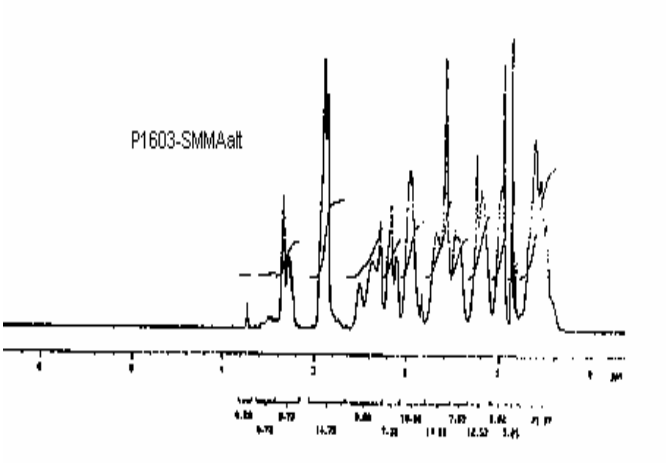
Thermal analysis:

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).

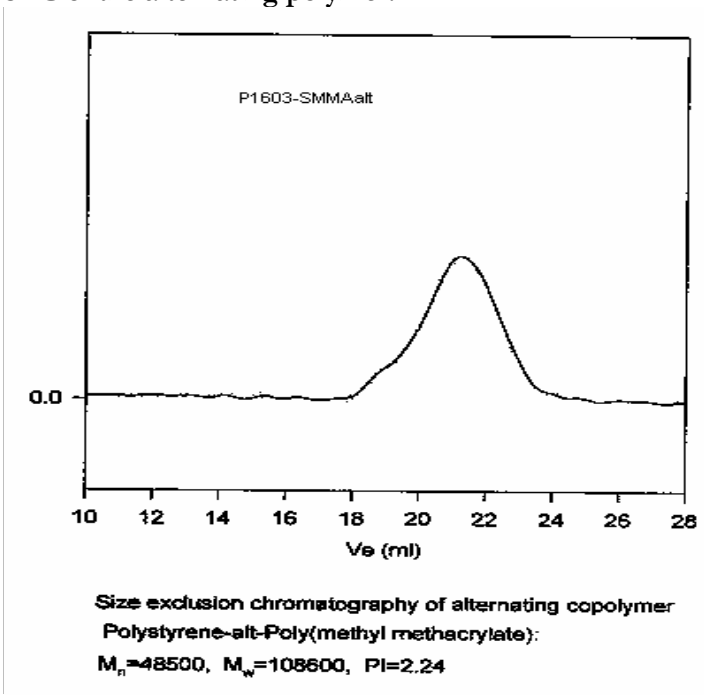
Solubility:

Random copolymer Poly(styrene-alt- methyl methacrylate) is soluble in $CHCl_3$, THF, DMF, toluene and precipitated out from methanol.

^{H}NMR for the polymer



SEC of the alternating polymer:



Size exclusion chromatography of alternating copolymer Polystyrene-alt-Poly(methyl methacrylate):
M_n=48500, M_w=108600, PI=2.24

DSC thermogram for the sample