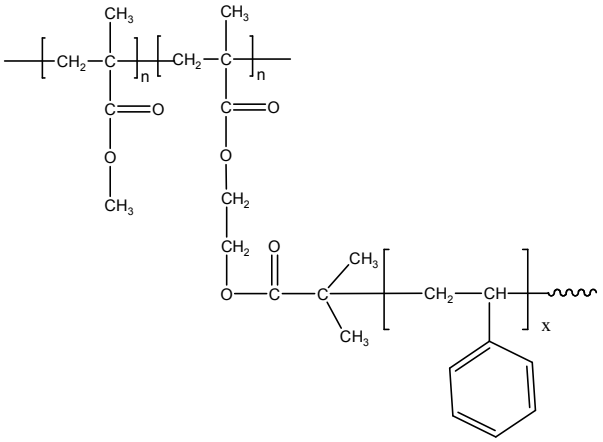
Sample Name:
Poly(methylmethacrylate-b-(isobutryl)ethylmethacrylate) grafted with polystyrene
Sample #: P13059-MMAIBEMA-G-S
Structure:



Composition:

$Mn \times 10^3$ MMA-b-IEMA-G-S	PDI
3.4-b-5.0-g-20.0	1.81
Number of grafts ≅ 18	Molecular weight of Polystyrene branch ≅ 1100
T_g for the polymer	88 °C

Synthesis Procedure:

Poly(Methylmethacrylate-b-2-bromoisobutyryl ethylmethacrylate) block copolymer is synthesized by controlled radical polymerization with Poly(methylmethacrylate)-CTA macroinitiater. Proprietary procedure is under publication. Polystyrene graft was done by controlled radical process.

Characterization:

SEC analysis of the obtained block copolymer in THF was carried out in presence of triethyl amine as eluent. The final block copolymer composition was confirmed by ^{1}H-NMR spectroscopy in CdCl3 by comparing the peak area of the methyl ester protons at 3.6 ppm against ethyl methacrylate at 4.2-4.17 ppm. Block copolymer PDI was determined by SEC.

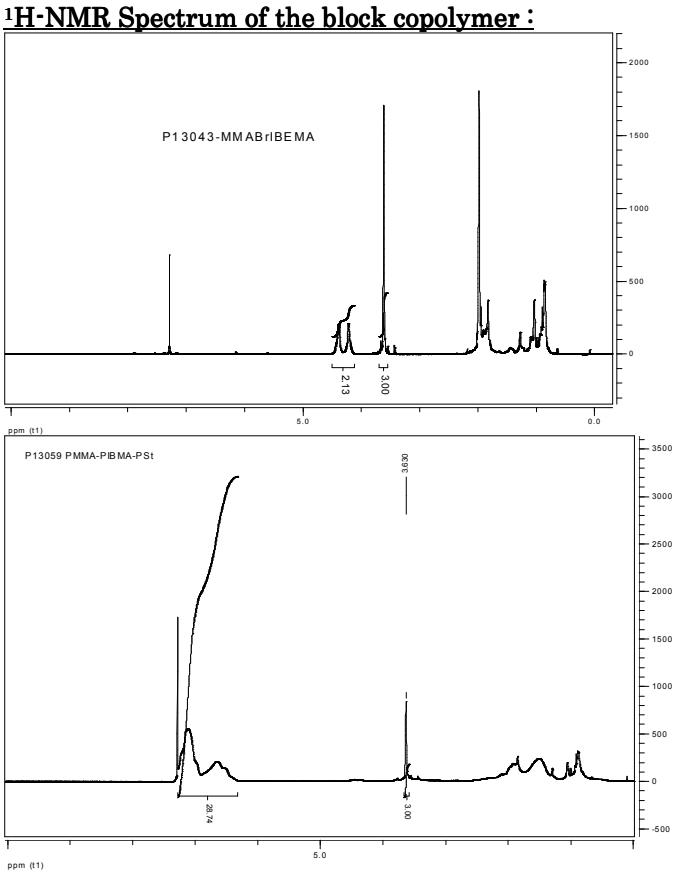
Thermal analysis:

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:

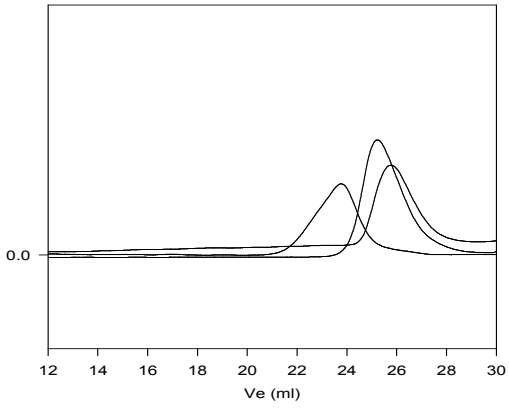
The polymer is soluble in THF and $CHCl_3$.

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



SEC of the block copolymer:

P13059-MMAIBEMA -G-St



Size exclusion chromatography:
Poly(methyl methacrylate), M_n=3400, M_w=5100, PI=1.50
Block Copolymer PMMA(3400)-b-PBrIEMA(5000), PI=1.5
Graft Poly-styrene Mn : 20000 Mw/Mn 1.81 of Grafts branch about =18
Mn of each branch: 1100
composition from H NMR

DSC thermogram for the polymer: