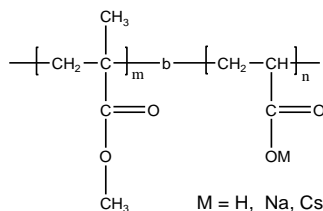


Sample Name: Poly(methyl methacrylate-b-acrylic acid)

Sample #: P8248A-MMAAA

Structure:

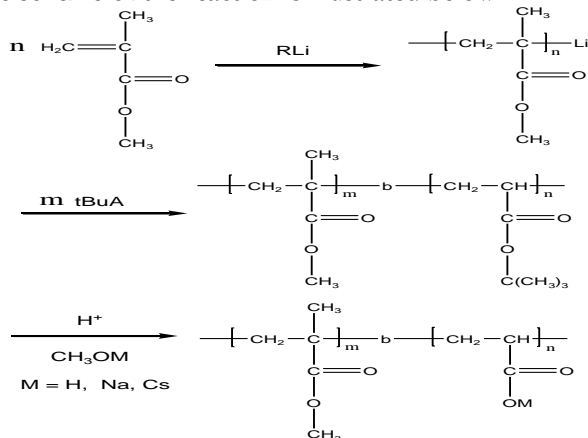


**Composition:**

Mn x 10 <sup>3</sup> PMMA-b-PAA	PDI
9.5-b-3.5	1.17
T <sub>g</sub> for MMA: 119°C	T <sub>g</sub> for PAA: Not distinct

**Synthesis Procedure:**

Poly(methyl methacrylate -b- acrylic acid) is prepared by living anionic polymerization with sequence addition of methyl methacrylate followed by t-butyl acrylate or vice versa and hydrolysis of the t-butyl group. The scheme of the reaction is illustrated below:



**Characterization:**

An aliquot of the anionic poly(methyl methacrylate) block was terminated before addition of t-butyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the t-butyl methacrylate protons at 1.43 ppm with the peak area of the methyl methacrylate protons at 3.6 ppm. Copolymer PDI is determined by SEC.

**Thermal analysis**

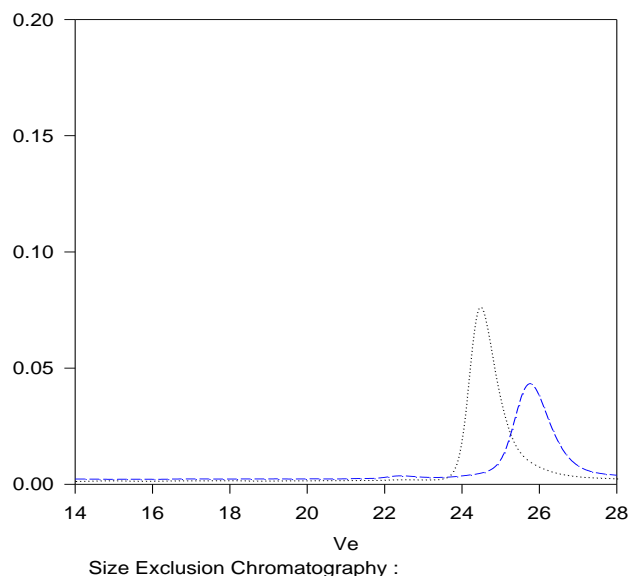
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T<sub>g</sub>).

**Solubility:**

Poly(methyl methacrylate -b- acrylic acid) is soluble in methanol depending on the compositions. It is precipitated out from ether and hexane.

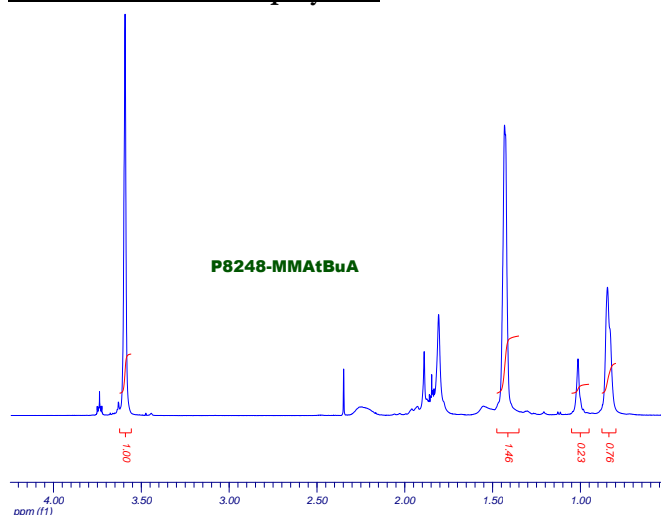
SEC of the block copolymer:

**P8248-MMAAtBuA Precursor for P8248A-MMAAA**



--- Poly tert.butylacrylate, M<sub>n</sub>=6000 Mw: 7000 M<sub>w</sub>/M<sub>n</sub>=1.15  
 ..... Block Copolymer PMMA(9500)-tBuA(6000), M<sub>w</sub>/M<sub>n</sub>=1.17  
 After Hydrolysis of tert. butyl ester: PMMA-b-AA: 9500-b-3500

NMR of the block copolymer:



**DSC thermograms for MMA:**

