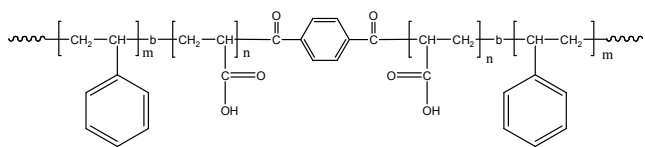


Sample Name:Poly(Styrene-*b*-acrylic acid-*b*-Styrene)

Sample #: P2559-SAAS

Structure:**Composition:**

Mn x 10 ³ (S- <i>b</i> -AA- <i>b</i> -S)	PDI
0.8- <i>b</i> -12.0- <i>b</i> -0.8	1.16
T _g for PS block:	Not distinct
T _g for AA block:	120°C

Synthesis Procedure:

Poly(styrene-*b*-tert. butylacrylate-*b*-styrene) is prepared by living anionic polymerization. The details are available in the cited reference. The scheme of the reaction is illustrated below:

**Characterization:**

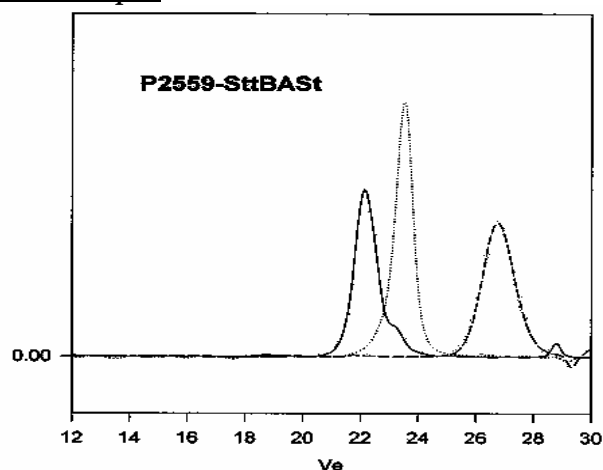
The molecular weight and polydispersity index of this polymer were determined by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector.

Thermal analysis:

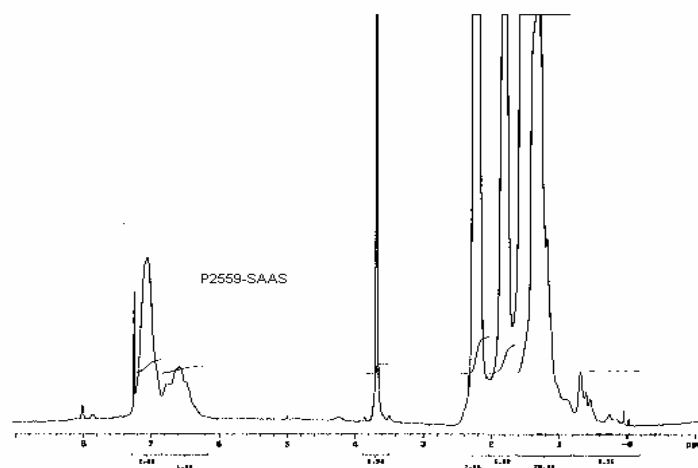
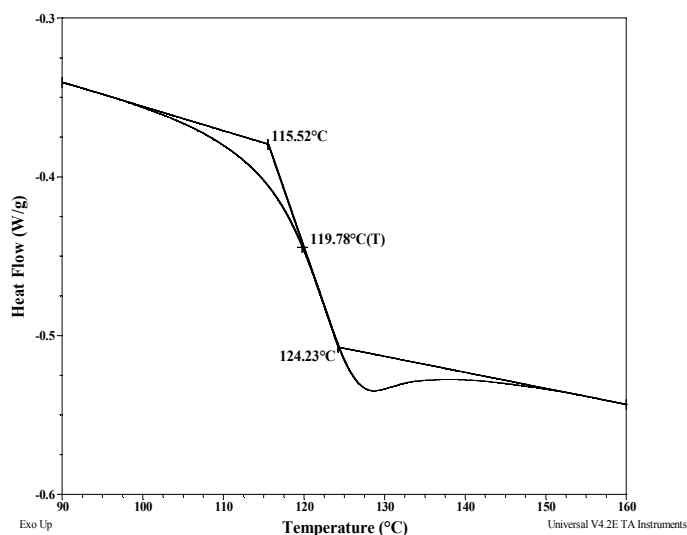
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

Polymer is soluble in THF, toluene and CHCl₃. It precipitates from methanol, ethanol, water and hexanes (depending on the compositions).

SEC of Sample:

Size Exclusion Chromatography of:
 ----- P2559-St, the first PS block, M_n=810, PI=1.30
 P2559-StBA, the diblock PS(810)-*b*-PtBA(10500), PI=1.10
 ——— P2559-StBAS, the triblock PS(810)-*b*-PtBuA(21000)-*b*-PS(810), PI=1.16 (precursor for P2559-SAAS)
 After Hydrolysis:
 Mn: 810 (PS)- 12000 (PAA)- 810 (PS)

¹H NMR of the polymer:**DSC thermograms for the sample:****Reference:**

S.K. Varshney, P. Kesani, N. Agarwal, J. Xin. Zhang, and M. Rafailovich. Synthesis of ABA type thermoplastic elastomers based on Polyacrylates, *Macromolecules*, 1999, 32, 235.