

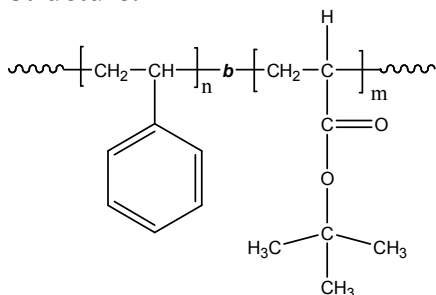
## SEC of Sample :

**Sample Name:** Poly(styrene-b- tert.butylacrylate)

**P 753-StBuA**

**Sample #:** P753-StBuA

**Structure:**



**Composition:**

Mn x 10 <sup>3</sup> S-b-tBuA	PDI
1.4-b-71.5	1.11

**Glass transition temperature at a glance**

T <sub>g</sub> for PS block	Not distinct
T <sub>g</sub> for tBuA block	42°C

**Synthesis Procedure:**

Poly(styrene-b-tert.acrylate) is prepared by living anionic polymerization in THF at -78°C using sec.BuLi initiator adduct with  $\alpha$ -methyl styrene in the presence of LiCl. tert.butyl acrylate (tBuA) monomer was added after dilution in THF. Further details are available in our published articles.<sup>1-4</sup>

**Characterization:**

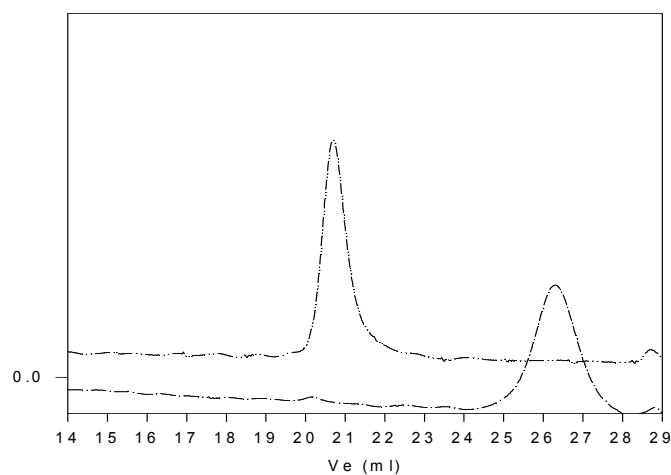
An aliquot of the anionic polystyrene block was terminated before addition of tBuA and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from <sup>1</sup>H-NMR. Copolymer Mw/Mn is determined by SEC.

**Thermal analysis of sample P753-StBuA**

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(styrene-b-tert.butylacrylate) is soluble in THF, toluene, dioxane and CHCl<sub>3</sub>. This polymer readily precipitates from methanol, ethanol, hexanes and water.



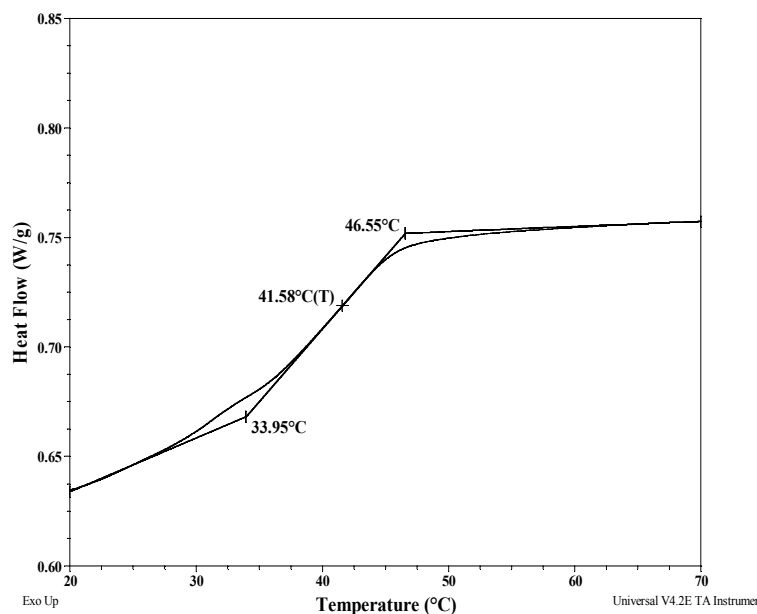
Size exclusion chromatography of polystyrene-b-poly(t-butyl acrylate)

Precursor of Polystyrene-b-Poly(acrylic acid) (P758-SAA):

----- Polystyrene, M<sub>n</sub>=1400, M<sub>w</sub>=1800 PDI=1.29

----- Block Copolymer PS(1400)-b-PtBuA(71500), PDI=1.11

**Thermogram for tBuA block**



**References for further information:**

1. S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
2. Ph. Teyssie, R. Fayt, J. P. Hautekeer, C. Jacobs, R. Jerome, L. Leemans and S. K. Varshney *Makromolekular Chemie, Macromol. Symp.*, 1990, 32,61-73.
3. S. K. Varshney, J. P. Hautekeer, R. Fayt, R. Jerome, and Ph.Teyssie *Macromolecules*, 1990, 23, 2618-2622.
4. R. Jerome, R. Forte, S. K. Varshney, R. Fayt, and Ph. Teyssie "The Anionic Polymerization of Alkylacrylates: A Challenge" in the Recent Advances in Mechanistic and Synthetic Aspects of Polymerization: M. Fontanille and A. Guyot Ed., NATO ASI Series C 215,101 (1987), CA Vol. 108, 12, 094992.