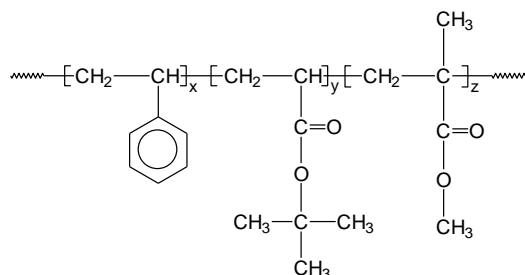


Sample Name: Poly (styrene-*b*-*tert*.butyl acrylate -*b*-methylmethacrylate)

Sample #: P724-StBuAMMA

Structure:

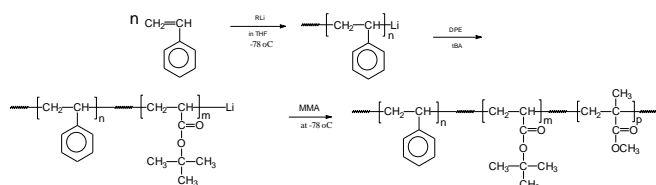


Composition:

Mn x 10 ³ S- <i>b</i> -tBuA- <i>b</i> -MMA	PDI
8.7- <i>b</i> -39.9-8.7	1.03

Synthesis Procedure:

Poly (styrene-*b*-*tert*.butyl acrylate -*b*-methylmethacrylate) is prepared by living anionic polymerization with sequence addition of styrene, tBuA, and then methyl methacrylate (MMA). The scheme of the reaction is illustrated as below:



Characterization:

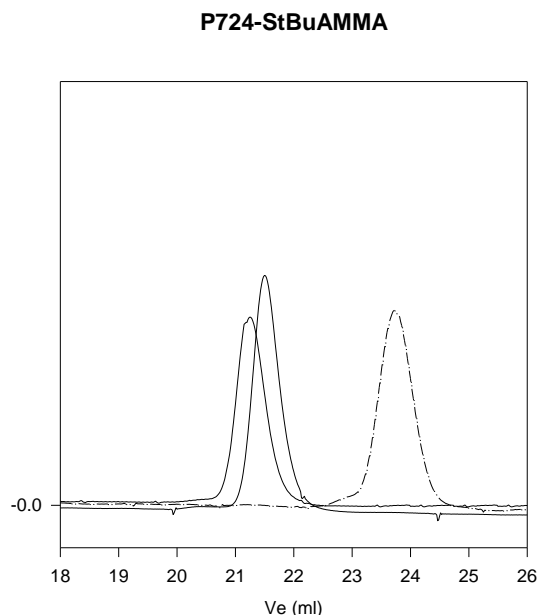
First Block: Size exclusion chromatography (SEC): Varian liquid chromatograph equipped with UV and refractive detector. SEC columns from Supelco were used with THF as the eluent. The columns were calibrated with monodisperse polystyrene. The molecular weights and the polydispersity index were calculated.

Second and Third Block: The chemical composition was extracted from proton NMR, which was recorded from Varian 500MHz instrument using CDCl₃ as solvent. The molecular weights of second and third block were calculated based on the molecular weight of other blocks and the chemical composition. The polydispersity index of block copolymer was obtained by SEC as described above.

Solubility:

Polymer is soluble in THF, toluene, and CHCl₃. The polymer readily precipitates from hexanes, ether and water.

SEC for the polymer:



Triblock copolymerization followed by size exclusion chromatography:

- Polystyrene block, M_n=8700, PI=1.08
- Diblock copolymer, M_n:PS(8700)-*b*-PtBuA(39900), PI=1.05
- .- Triblock copolymer, M_n: PS(8700)-*b*-PtBuA(39900)-*b*-PMMA(8700), PI=1.03