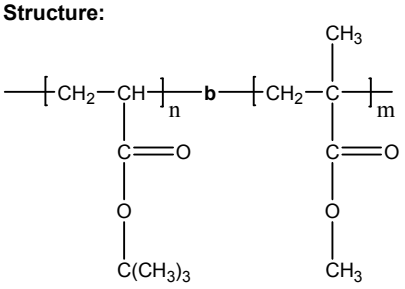
Sample Name: **Poly(t-butyl acrylate-b-methyl methacrylate)**

Sample #: **P830-tBuAMMA**

Structure:

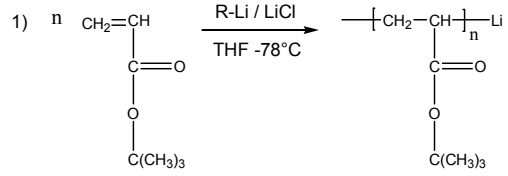


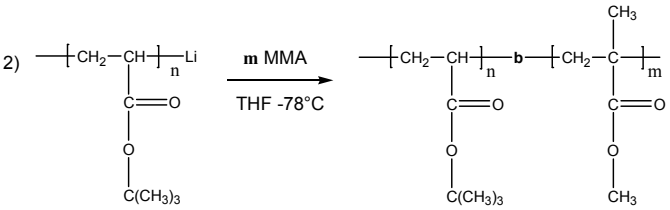
Composition:

Mn x 10^3 tBuA-b-MMA	PDI
4.6-b-3.2	1.08

Synthesis Procedure:

Poly(t-butyl acrylate-b-methyl methacrylate) is prepared by living anionic polymerization with sequence addition of t-butylacrylate followed by methyl methacrylate in THF using an RLi/LiCl adduct. The scheme of the reaction is illustrated below:





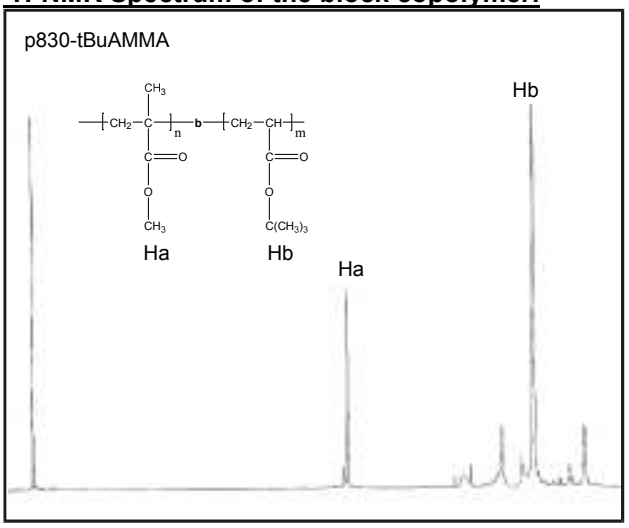
Characterization:

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

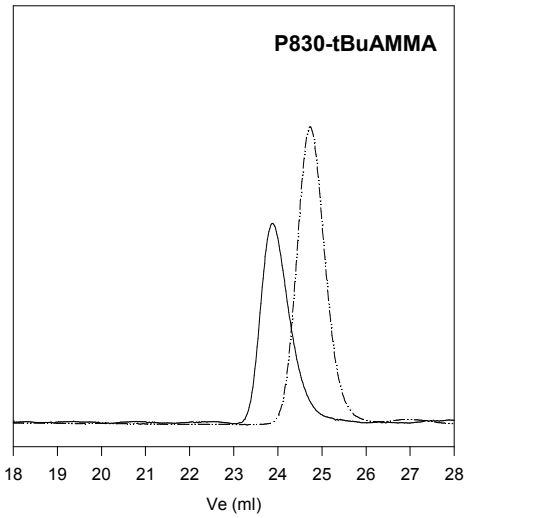
Solubility:

Poly(t-butyl acrylate-b-methyl methacrylate) is soluble in THF, $CHCl_3$, toluene, dioxane. The polymer can precipitate from ethanol/water or methanol/water mixtures.

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



SEC of the block copolymer:



Size exclusion chromatography of poly(tert.butylacrylate-b-Methylmethacrylate)

PtBuA, M_n=4600, M_w=5000, PI=1.09

Block Copolymer PtBuA(4600)-b-PMMA(3200), PI=1.08