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

Sample #: **P18213-StBuMA**

Structure:
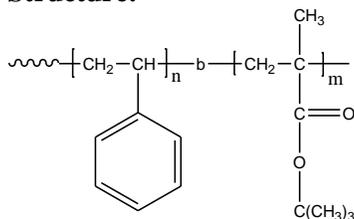
Composition:

Mn x 10^3 S-b-tBuMA	Mw/Mn (PDI)
35.0-b-7.0	1.02

Glass transition temperature at a glance

T_g for PS block	102 oC
T_g for tBuMA block	Not distinct

Synthesis Procedure:
Poly(styrene-b-t-butyl methacrylate) is prepared by anionic polymerization with sequence addition of styrene followed by t-butyl methacrylate.

Characterization:
An aliquot of the polystyrene block was terminated before addition of t-butyl 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 styrene protons at 6.3-7.2 ppm with the peak area of t-butyl methacrylate protons at 1.43 ppm. Block 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 10ºC/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:
Poly(styrene-b-t-butyl methacrylate) is soluble in THF, dioxane, CHCl$_3$.

SEC profile of the first block:

Sample ID: P18213-S

Concentration (mg/mL)	58.5590
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-Sep26-2013-0000.vcm
Column Set	3x PL 1113-6300
System	System 1

P18213-S_01.vdt — Refractive Index — Right Angle Light Scattering — Low Angle Light Scattering — Viscometer-DP
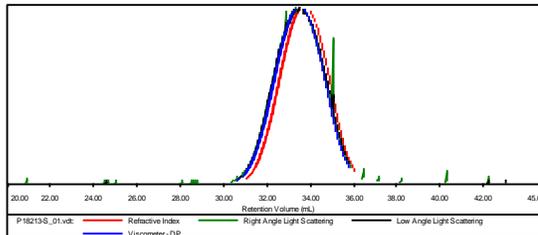
Sample	Mn	Mw	Mp	Mw/Mn	IV
P18213-S_01.vdt	34,913	36,189	34,091	1.037	0.2770

P18213-S_01.vdt — Log Molecular Weight — Cumulative Weight Fraction — Normalized Mole Fraction
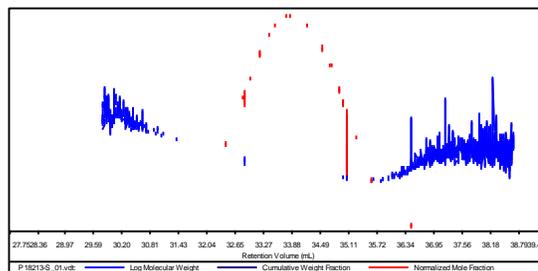
SEC profile of the block copolymer:
P18213-StBuMA
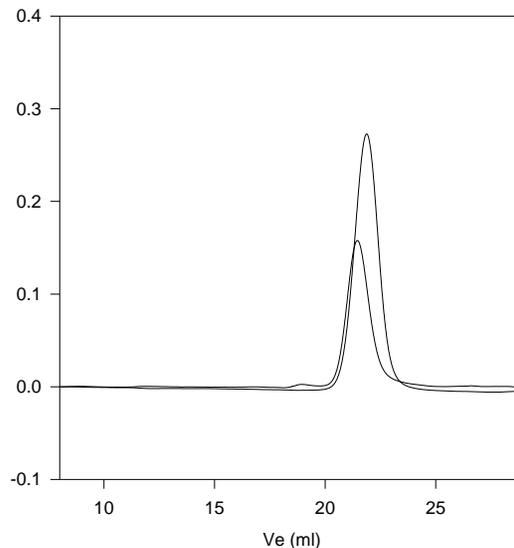
Size exclusion chromatography of polystyrene-b-poly(t-butyl methacrylate)

—— Polystyrene, M$_n$=35,000, M$_w$=36,000, PI=1.04

—— Block Copolymer PS(35,000)-b-PtBuMA(7,000), PI=1.02

v.R-02