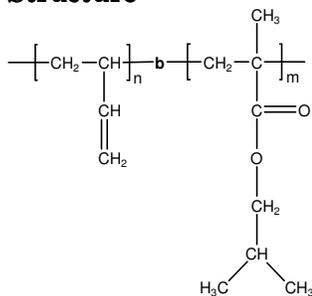


Sample Name: Poly(1,2-butadiene-b-i-butyl methacrylate)

Sample #: P2337-BdiBuMA

Structure:

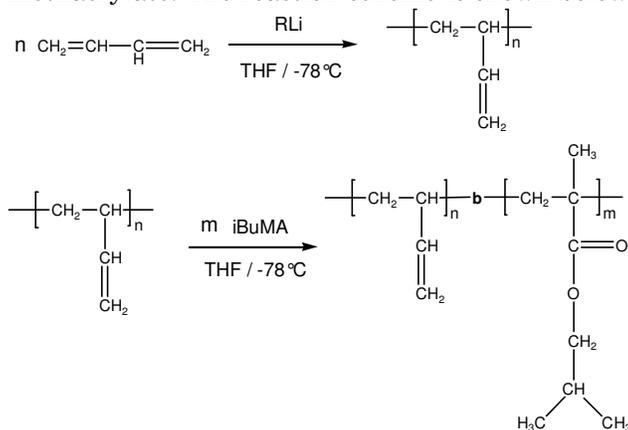


Composition:

$M_n \times 10^3$ Bd-b-iBuMA	M_w/M_n (PDI)
70.0-b-324.0	1.10
T_g for Bd block: -11 °C	T_g for Bd block: 80 °C

Synthesis Procedure:

Poly(1,2-butadiene-b-i-butyl methacrylate) is prepared by living anionic polymerization with sequence addition of butadiene followed by isobutyl methacrylate. The reaction scheme is shown below:



Characterization:

An aliquot of the anionic poly(butadiene) block was terminated before addition of i-butyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from $^1\text{H-NMR}$ spectroscopy by comparing the peak area of the vinylic butadiene protons with the isobutyl protons. Block copolymer PDI is determined by SEC.

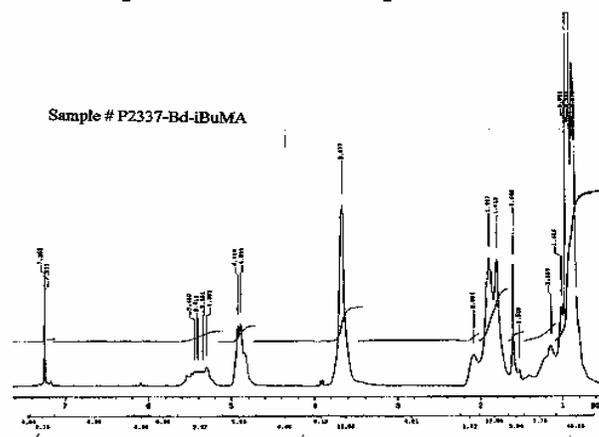
Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 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).

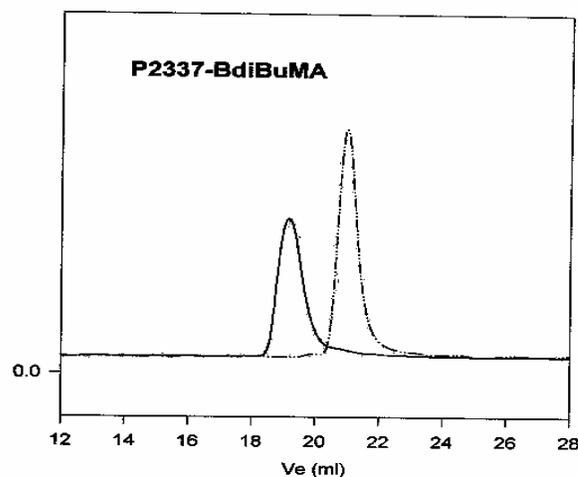
Solubility:

Poly(butadiene-b-i-butyl methacrylate) is soluble in THF, CHCl_3 , toluene, dioxane.

$^1\text{H NMR}$ spectrum of the sample



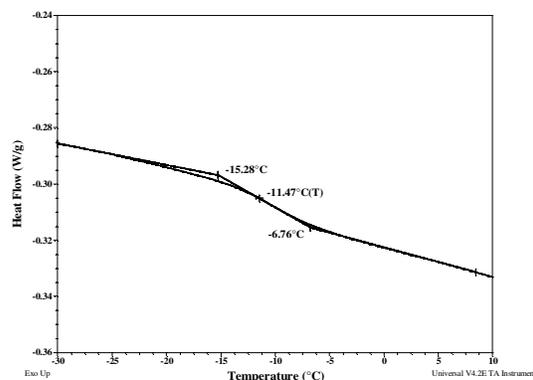
SEC profile of the block copolymer



SEC profile of the polymer:

- Polybutadiene block, $M_n=70000$, $M_w=74200$, $PI=1.06$
- Diblock Copolymer PBd(70000)-b-PIBuMA(324000), $PI=1.10$
Final molecular weight from Light scattering

Thermogram for Bd block:



Thermogram for iBuMA block:

