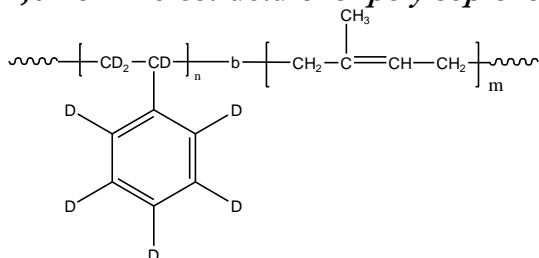


**Sample Name:** Deuterated (d8)Poly(styrene-b-Protonated-isoprene)  
(Polyisoprene rich in 1,4-addition)

**Sample #:** P4162dPSIp

**1,4-rich microstructure for polyisoprene block:**



#### Composition:

Mn x 10 <sup>3</sup> dPS-b-Ip	Mw/Mn (PDI)
70.0-b-67.0	1.06
T <sub>g</sub> for dPS block	96°C
T <sub>g</sub> for PIp block	-65°C

#### Synthesis Procedure:

Deuterated Poly(styrene-b-isoprene) is prepared by living anionic polymerization in non-polar solvent with sequence addition of styrene followed by isoprene.

#### Characterization:

An aliquot of the anionic polystyrene block was terminated before addition of isoprene and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The block copolymer composition was then calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the vinylic isoprene proton at 5.1 ppm with the aromatic protons of polystyrene at 6.3-7.2 ppm. Copolymer PDI is determined by SEC.

#### Thermal analysis:

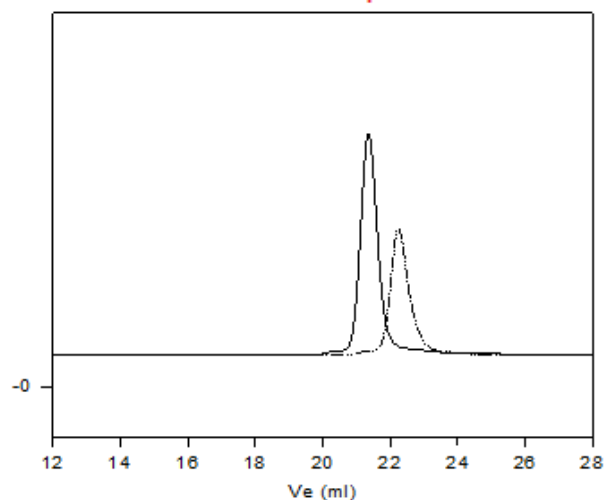
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T<sub>g</sub>).

#### Solubility:

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

#### SEC of Sample of the block copolymer:

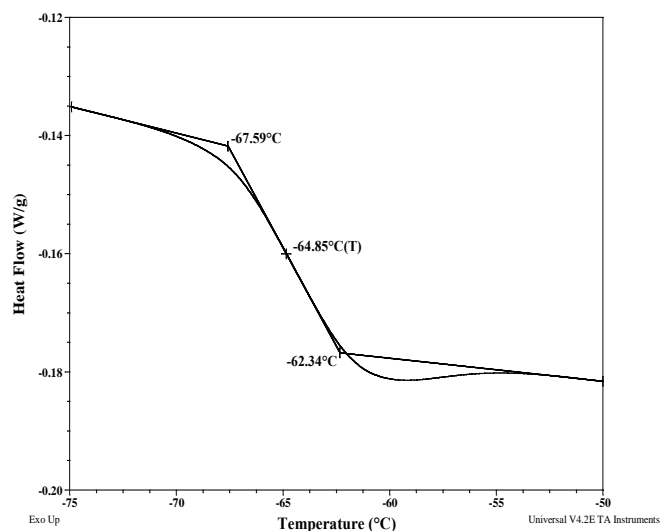
P4162-dPSIp



Deuterated Polystyrene, M<sub>n</sub>=70000, M<sub>w</sub>=73500, PI=1.05

Block Copolymer dPS(70000)-b-PI(67000), PI=1.06

#### Thermogram for PIp block:



#### Thermogram for dPS block:

