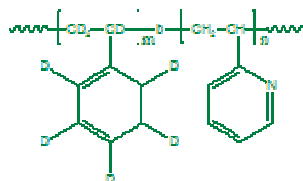


Sample Name:Deuterated Polystyrene (d₈)-b- 2 vinyl
pyridine (protonated)**Sample #:** P19306-PdS2VP**Structure:****Composition:**

Mn x 10 ³ (dPS-b-2VP)	PDI
44.0-b-26.5	1.12
T _g for dPS block	103°C
T _g for 2VP block	Not observed

Synthesis Procedure:

Deuterated poly(styrene-b-2-vinyl pyridine) diblock copolymer is prepared by living anionic polymerization.

Characterization:

The molecular weight and polydispersity index (PDI) of the block copolymer are characterized by size exclusion chromatography (SEC). The composition of the block copolymer was calculated from ¹H-NMR by comparing the peak area of the phenyl polystyrene protons between 6.4 to 7.2 ppm (indicating about 1% protonated fraction) and the ethylene oxide protons at 3.65 ppm. This is given an approximate analysis. The yield of the polymer from the theoretical amount of deuterated styrene and protonated vinyl pyridine monomer calculate also the compositions required.

Thermal analysis

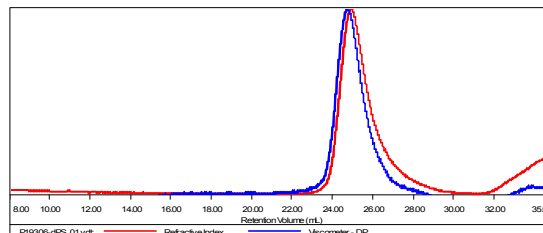
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

The polymer is soluble in THF (at 35°C), CHCl₃, benzene, toluene, dioxane.

SEC of the product:**Sample ID: P19306-dPS**

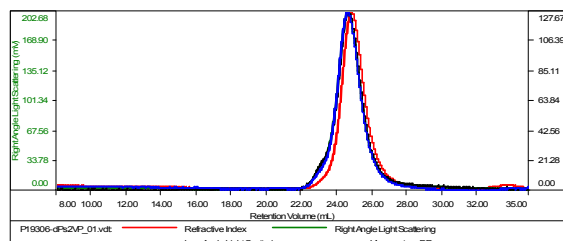
Concentration (mg/mL)	1.6703
Sample dV/dC (mL/g)	0.1850
Method File	PS80K-May20-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



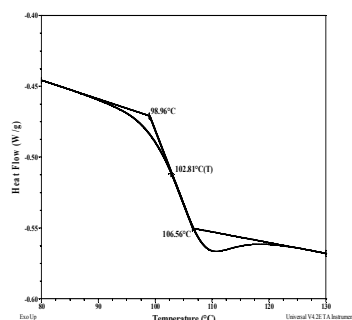
Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19306-dPS_01.vdt	44,266	53,044	55,587	1.198	0.4833

Sample ID: P19306-dPS2VP

Concentration (mg/mL)	5.4488
Sample dV/dC (mL/g)	0.1700
Method File	PS80K-May20-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersity	Intrinsic Viscosity (dL/g)
P19306-dPS2VP_01.vdt	70,542	79,324	71,356	1.124	0.5496

DSC thermogram for dPS block:**References for further information:**

1. S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
2. S. K. Varshney, Jian-Xin Zhang. US patent 7009,033 B3 2006.