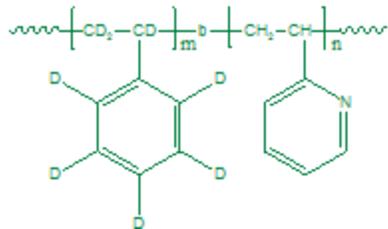


Sample Name:

Deuterated Polystyrene (d₈)- 2 vinyl pyridine (protonated)

Sample #: P11063A-PdS2VP

Structure:



Composition:

Mn x 10 ³ (dPS-b-2VP)	PDI
59.5-b-36.0	1.10

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

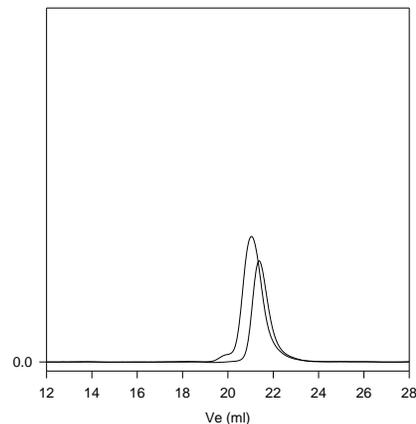
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

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

SEC of the product:

P11063A-dPS2VP
Deuterated polystyrene(d8) block



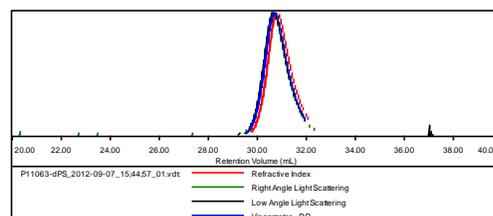
Size exclusion chromatography of deuterated(d8)polystyrene-b-2-vinyl pyridine(protonated)

— Polystyrene, M_n=59,500 Mw= 64,000 PI=1.07

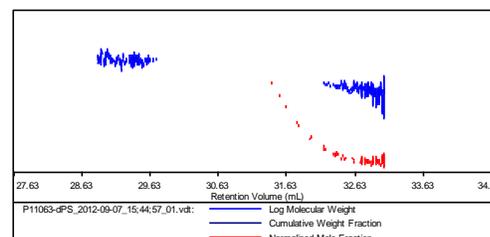
— deuterated (d8)Polystyrene(59,500)-b-Poly(2-vinyl pyridine)(36,000), PI=1.10

Sample ID: P11063-dPS

Concentration (mg/mL)	15.4462
Sample dn/dc (mL/g)	0.1700
Method File	PS80K-aug-0002.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn (Da)	Mw (Da)	Mp (Da)	Mw/Mn	IV (dL/g)
P11063-dPS_2012-09-07_15:44:57_01.vdt	59,481	63,905	63,277	1.074	0.3687



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.