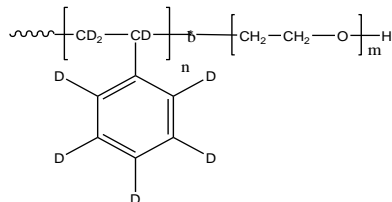


**Sample Name: Deuterated Polystyrene
(d₈)- ethylene oxide (protonated)**

Sample #: P2796-dPSEO

Structure:



Composition:

Mn x 10 ³ (dPS-b-EO)	PDI
155.0-b-9.0	1.08
T _g for PS block 102°C	
T _m , T _c , T _g for PEO block Not observed	

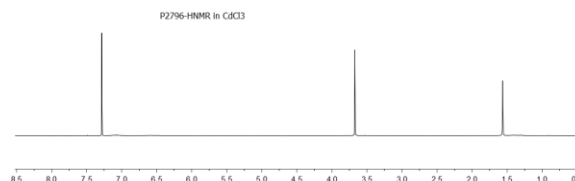
Synthesis Procedure:

Deuterated Poly(styrene-b-ethylene oxide) diblock copolymer is prepared by living anionic polymerization.

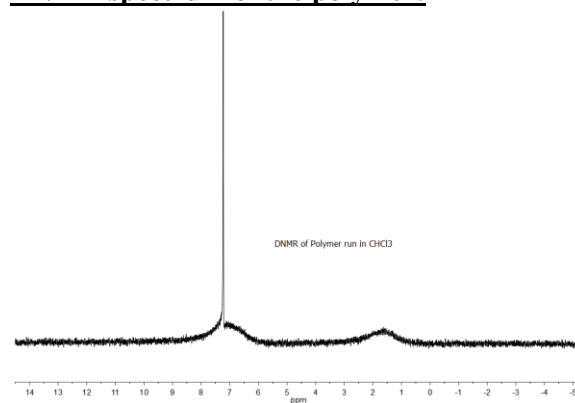
Characterization:

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 ethylene oxide monomer calculates also the compositions required.

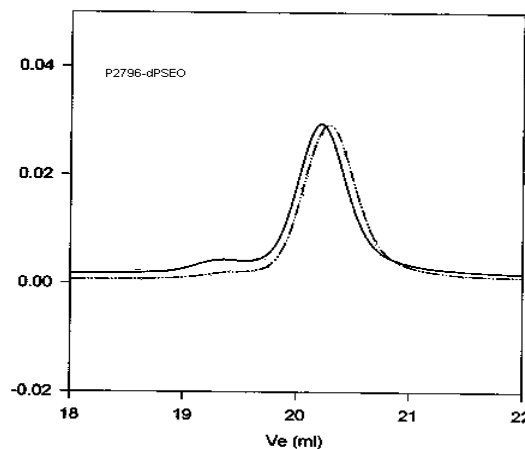
HNMR spectrum of the polymer:



DNMR spectrum of the polymer:



SEC profile of the product:



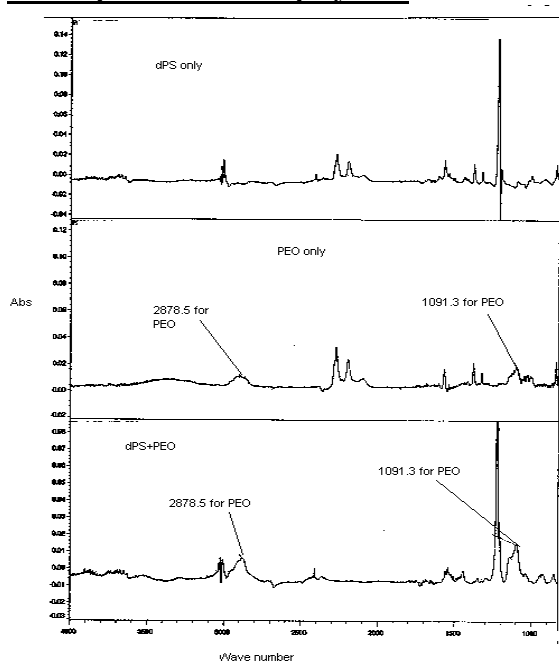
Size exclusion chromatography of deuterated poly(styrene-b-ethylene oxide-protonated)

— deuterated poly(styrene), M_n=155000, M_w=167000, PI=1.08

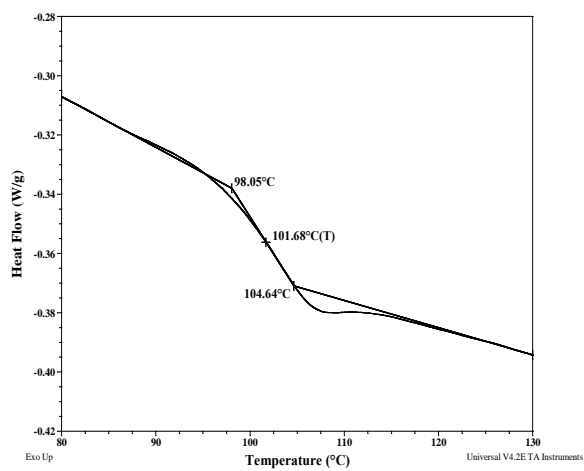
— Block Copolymer PdS(155000)-b-PEO(9000), PI=1.08

Composition from FTIR PEO block around 5.2 %

FTIR spectrum of the polymer:



DSC thermogram for PS 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.