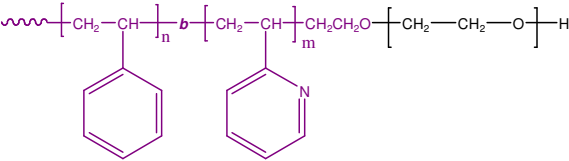


Sample Name:
Poly(styrene-b-2-vinyl pyridine-ethylene oxide)

Sample #: P40007-S2VPEO

Structure:



Composition:

Mn x 10 ³ S-b-2VP-b-EO 162.0-b-34.0-b-7.0 Calculated from ¹ H-NMR	PDI 1.08
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Synthesis Procedure:

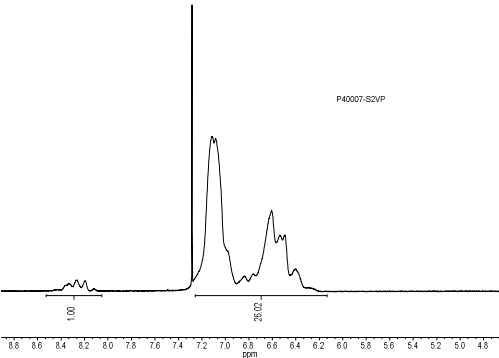
Poly(styrene-b-2-vinyl pyridine-ethylene oxide) triblock copolymer is prepared by living anionic polymerization by successive addition of monomer using cumyl potassium as initiator.

Characterization:

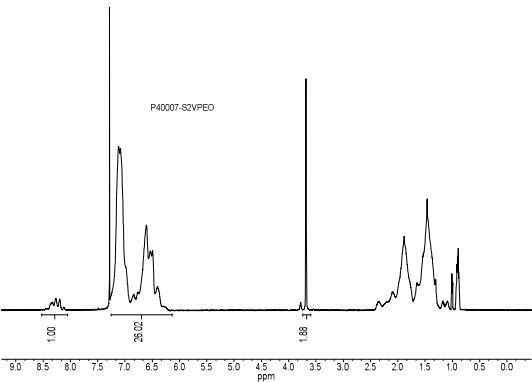
Polymer at different stages of polymerization was analyzed by size exclusion chromatography (SEC). The Block copolymer composition was then calculated from ¹H-NMR spectroscopy.

Solubility: Poly(styrene-b-2-vinylpyridine-b-ethylene oxide) is soluble in THF, toluene, and CHCl₃.

¹H NMR spectrum of S2-VP diblock copolymer:

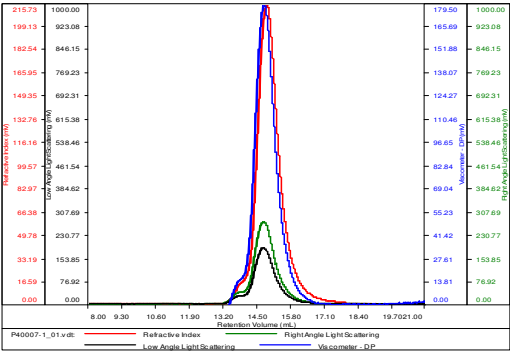


¹H NMR spectrum of the triblock polymer:



SEC elugram of the triblock polymer:

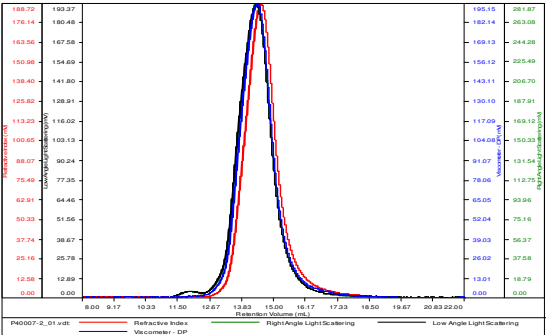
P40007-S	
Conc (mg/mL)	4.8695
dn/dc (mL/g)	0.1550
Method	PS80k-May25-2016-0000.vcm
Solvent	DMF w 0.023M LiBr
Column	PSS



Sample	Mn	Mw	Mp	Mw/Mn	IV
P40007-1_01.vdt	162,573	167,749	165,603	1.032	0.3834

P40007-S2VP

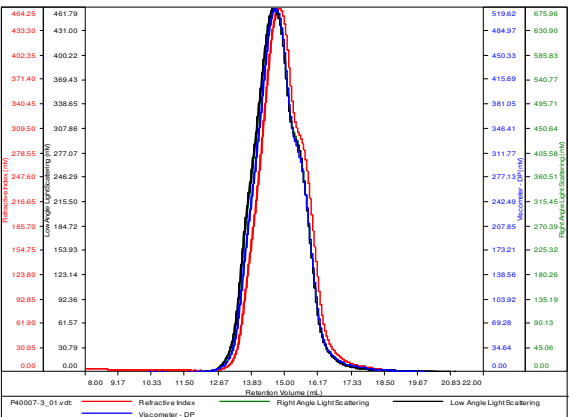
Conc (mg/mL)	6.0906
dn/dc (mL/g)	0.1500
Method	PS80k-July22-2016-0000.vcm
Solvent	DMF w 0.023M LiBr
Column	PSS



Sample	Mn	Mw	Mp	Mw/Mn	IV
P40007-2_01.vdt	195,708	214,383	198,801	1.095	0.4994

P40007-S2VPEO

Conc (mg/mL)	20.2284
dn/dc (mL/g)	0.1450
Method	PS80k-July22-2016-0000.vcm
Solvent	DMF w 0.023M LiBr
Column	PSS



Sample	Mn	Mw	Mp	Mw/Mn	IV
P40007-3_01.vdt	203,895	214,936	202,600	1.054	0.4985

Thermal Analysis of the sample S2VPEO

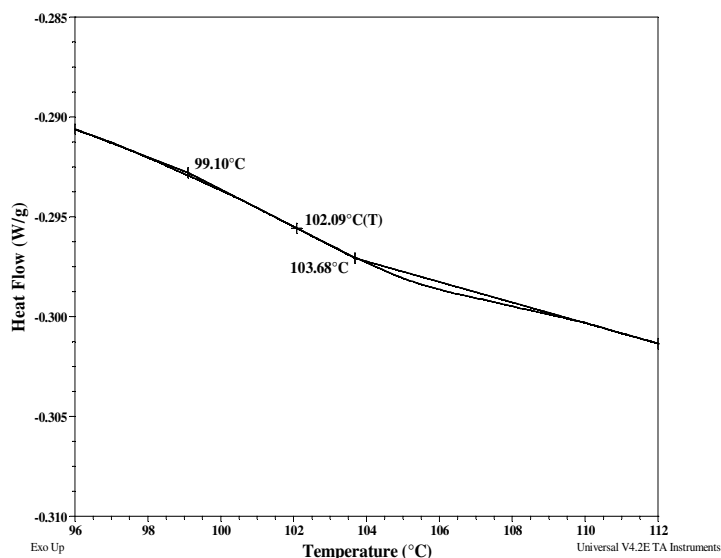
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Thermal analysis results at a glance

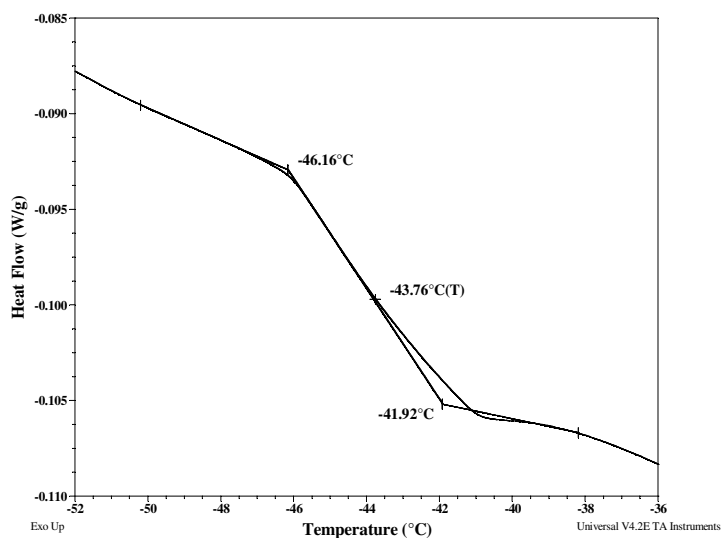
For PS block: T_g : 102°C	For 2VP block: T_g : Not distinct
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For PEO block		
T_g : -44°C	T_m : 61°C	T_c : 34°C

Thermogram for PS block:



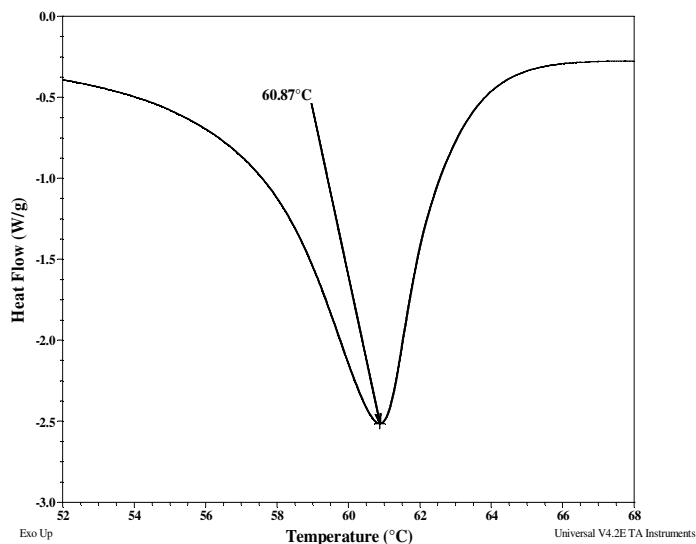
Thermogram for PEO block:



Melting and crystallization curve for the sample

The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak.

Melting curve for PEO block:



Crystallization curve for PEO block:

