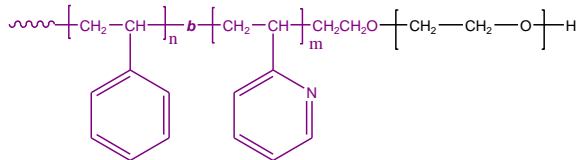


**Sample Name:**  
**Poly(styrene-b-2-vinyl pyridine-ethylene oxide)**  
**Sample #:** P18219-S2VPEO

**Structure:**



**Composition:**

Mn x 10 <sup>3</sup> S-b-2VP-b-EO	PDI
13.0-b-14.5-b-21.0 Calculated from <sup>1</sup> H-NMR	1.08

**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.

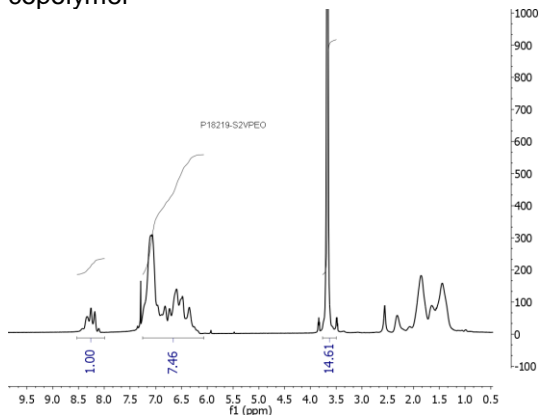
**Characterization:**

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

**Solubility:**

Poly(styrene-b-2-vinylpyridine-b-ethylene oxide) is soluble in THF, toluene, and CHCl<sub>3</sub>.

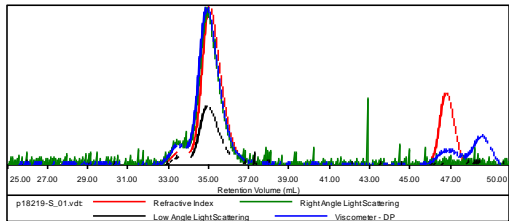
<sup>1</sup>H-NMR Spectrum of the polymer S2 VPEO triblock copolymer



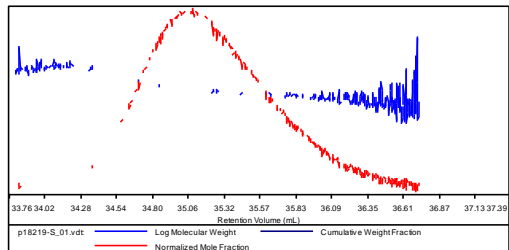
**SEC for the triblock polymer:**

**Sample ID: P18219-S**

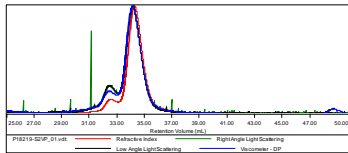
Concentration (mg/mL)	7.1078
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-Sep26-2013-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



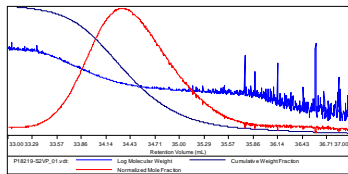
Sample	Mn	Mw	Mp	Mw/Mn	IV
p18219-S_01.vdt	13,197	13,786	13,192	1.045	0.1462



Concentration (mg/mL)	14.2773
Sample dn/dc (mL/g)	0.1700
Method File	PS80K-Sep26-2013-0000.vcm
Column Set	3x PL 1113-6300
System	System 1

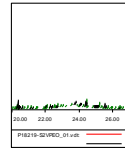


Sample	Mn	Mw	Mp	Mw/Mn	IV
P18219-S2VP_01.vdt	25,714	26,909	25,755	1.046	0.1866



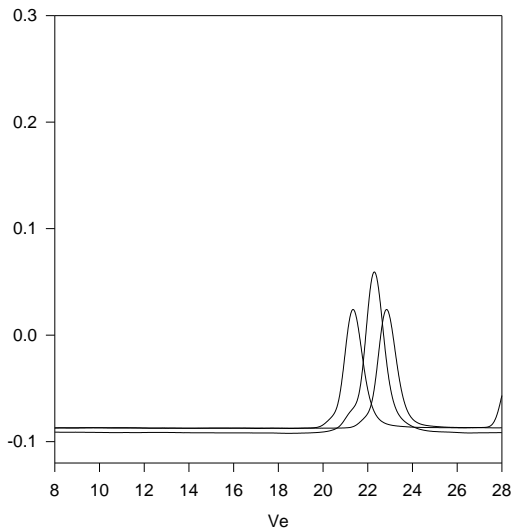
**Sam**

Concentration (mg/mL)	
Sample dn/dc (mL/g)	
Method File	
Column Set	
System	



Sample	
P18219-S2VPEO_01.vdt	

**P18219-S2VPEO**



**Size Exclusion Chromatography :**

— First PS block, M<sub>n</sub>=13,000, M<sub>w</sub>/M<sub>n</sub>=1.09

— PS2Vp, the diblock PS(13,000)-b-P2Vp(14,500), M<sub>w</sub>/M<sub>n</sub>=1.09

— PS2VpEO, the triblock PS(13,000)-b-P2Vp(14,500)-b-PEO(21,000) M<sub>w</sub>/M<sub>n</sub>=1.08 (composition from <sup>1</sup>H NMR)

**References:**

- S. K. Varshney, X. F. Zhong and A. Eisenberg *Macromolecules* **1993**, 26, 701-706.
- Gohy J.-F., Willet N., Zhang J.-X., Varshney S., Jerome, ., *pH dependence of the morphology of aqueous micelles formed by poly(styrene)-block-poly(2-vinylpyridine)-block-poly(ethylene oxide) copolymers*, e-polymers 2002, 35.
- Gohy, J.-F., Lohmeijer, B Varshney S,K, Decamps B., Leroy E., Boileau S., Schubert U. S., *Stimuli-responsive aqueous micelles from an ABC metallo-supramolecular triblock copolymer*, *Macromolecules* 2002, 35, 9748-9755.

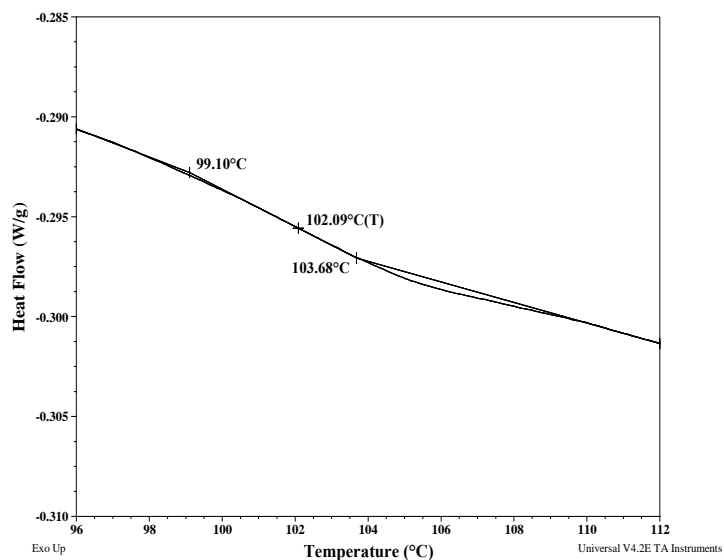
## Thermal Analysis of the sample S2VPEO

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 ( $T_g$ ).

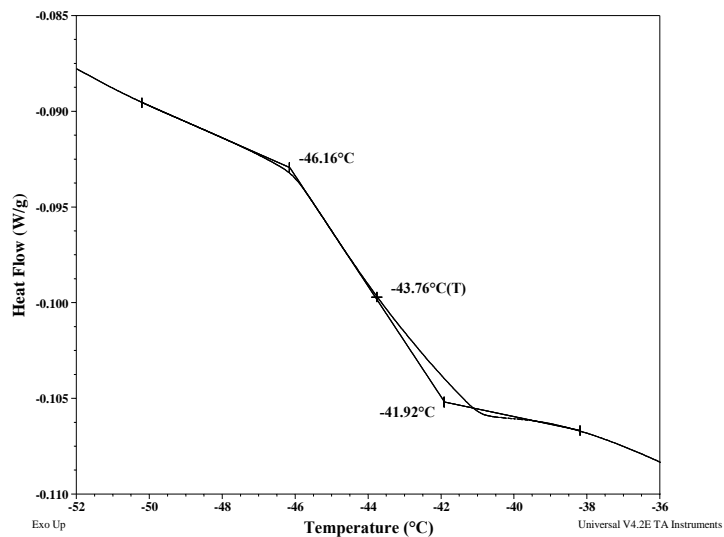
### Thermal analysis results at a glance

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

### Thermogram for PS block:



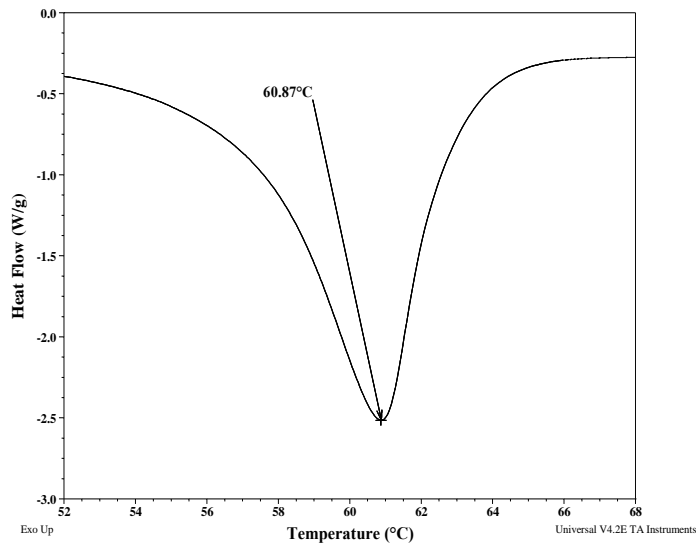
### Thermogram for PEO block:



## 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

