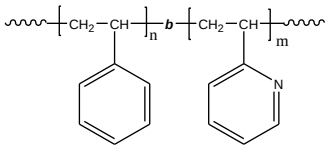
Sample Name: **Poly(styrene-b-4-vinyl pyridine)**

Sample #: **P18707A-S4VP**

Structure:



Composition:

Mn × 10^3 S-b-4VP	PDI
38.0-b-82.0	1.28
Tg for PS block: 104 °C	Tg for 4VP block: 153 °C

***Synthesis Procedure*:**

Poly(styrene-b-4-vinyl pyridine) is prepared by living anionic polymerization in THF at –78 °C in the presence of LiCl an additive.

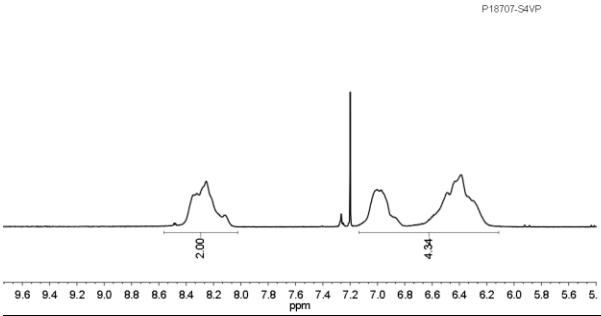
Characterization:

BY SEC and by HNMR.

Purification of the obtained polymer was carried out rigorously *as follows to ensure the removal of the catalyst side product:*

1. Dissolved the polymer in $CHCl_3$ and wash with de-ionized distilled water to remove the any soluble organic catalyst side product.
2. Polymer extracted from water with chloroform.
3. Polymer solution in $CHCl_3$ was dried over anhydrous sodium sulfate.
4. Solution filtered and than passed through a column packed with basic Al_2O_3 .
5. Solution concentrated on rota-evaporator
6. Solution precipitated in cold hexane and redissolved in benzene and freeze dried.
7. Final dried under vacuum for 48h at 50°C.

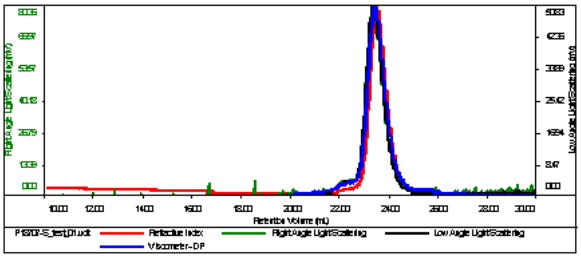
HNMR Spectrum of the Polymer



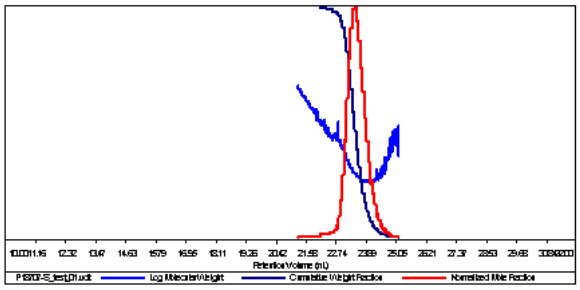
SEC for the polymer:

Sample ID: P18707-S

Concentration (mg/mL)	6.7672
Sample dn/dc (mL/g)	0.1850
Method File	PS80K-Apr15-2014-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF

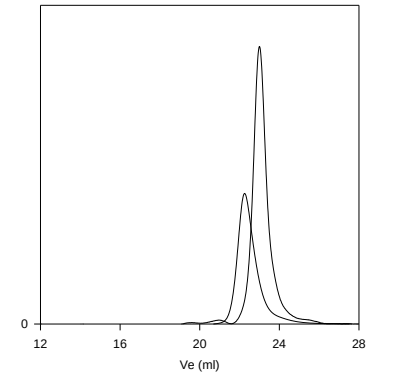


Sample	Mn	Mw	Mp	Mw/Mn	IV
P18707-S_test_01.vdt	37,918	40,750	37,581	1.075	0.1198



SEC of the final block copolymer analysed in DMF:

P18707A-S4VP

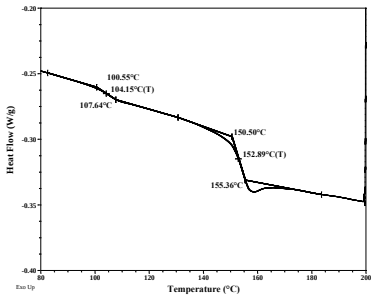


Size exclusion chromatography of polystyrene-b-poly(4-vinylpyridine)

—— Polystyrene, M_n=38,000, PI=1.07

—— Block Copolymer PS(38,000)-b-P4VP(82,000), PI=1.28 Run in DMF

DSC thermogram for the PS block:



References:

(1). S. K. Varshney, X. F. Zhong and A. Eisenberg *Macromolecules,* **1993**, 26, 701-706.

(2). Z.Gao, S. K. Varshney, S. Wong, A. Eisenberg *Macromolecules,* **1994**, 27, 7923-7927.