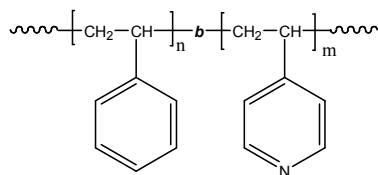


Sample Name: **Poly(styrene-b-4-vinyl pyridine)**

Sample #: **P3918-S4VP**

**Structure:**



**Composition:**

$M_n \times 10^3$ PS-b-4VP	PDI
20.5-b-36.0	1.08
$T_g$ for PS block: 100°C	$T_g$ for 4VP block: 145°C

**Synthesis Procedure:**

Poly(styrene-b-4-vinyl pyridine) is prepared by living anionic polymerization in THF or THF-DMF solvent mixtures at  $-78^\circ\text{C}$ . Polystyrene macroanions were end capped with a unit of diphenyl ethylene (DPE) before adding 4-vinylpyridine (4VP) monomer. For further details please see our published articles.<sup>1,2</sup> The scheme of the reaction is illustrated below:

**Characterization:**

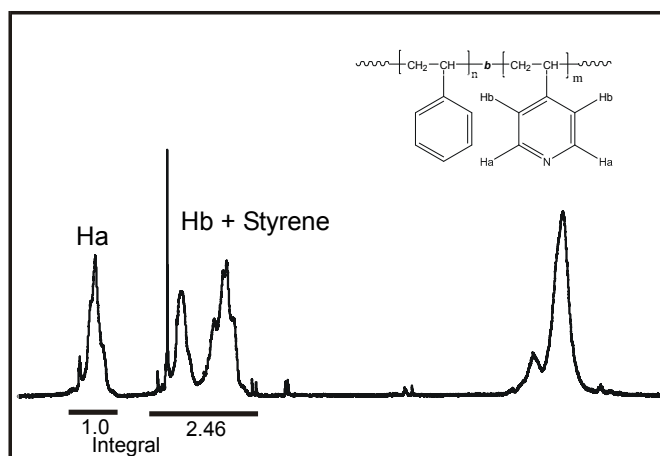
An aliquot of the anionic polystyrene block was terminated before addition of 4-vinyl pyridine and analyzed by size exclusion chromatography (SEC) in DMF to obtain the molecular weight and polydispersity index (PDI). The block copolymer composition was then calculated from  $^1\text{H-NMR}$  spectroscopy by comparing the peak area of the two aromatic 4-VP protons at about 8.5 ppm with the peak area of the aromatic protons of polystyrene at 6.3-7.2 ppm. The composition of the block copolymer can also be determined by titration in acetic acid/ $\text{HClO}_4$  using crystal violet indicator. Copolymer PDI is determined by SEC.

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of  $15^\circ\text{C}/\text{min}$ . The inflection glass transition temperature ( $T_g$ ) of the sample has been considered.

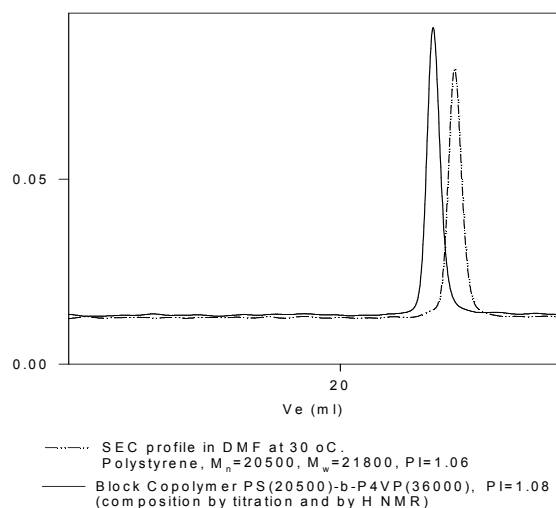
**Solubility:**

Poly(styrene-b-4-vinyl pyridine) is soluble in DMF,  $\text{CHCl}_3$ . The polymer can also be solubilized in THF depending on its chemical composition. The polymer readily precipitates from hexanes and diethyl ether.

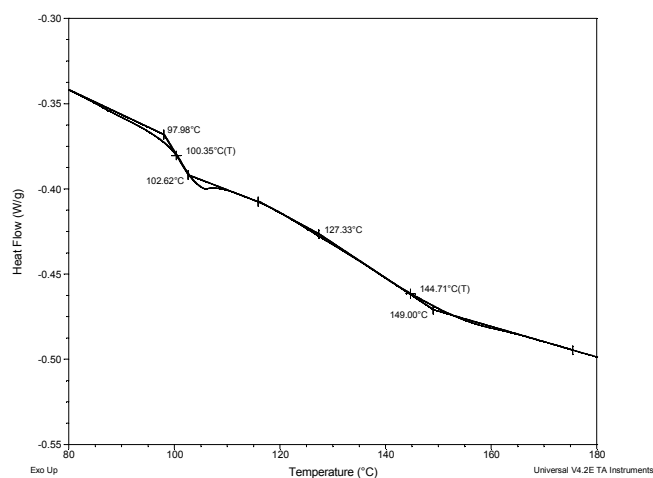
**$^1\text{H-NMR}$  Spectrum of Sample #: P3918-S4VP:**



**SEC of Sample # P3918-S4VP:**



**Thermograms of sample:**



**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.