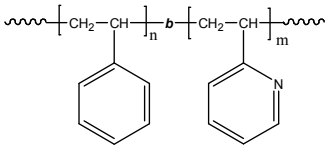
Sample Name: **Poly(styrene-b-2-vinyl pyridine)**

Sample #: **P4824-S2VP**

Structure:

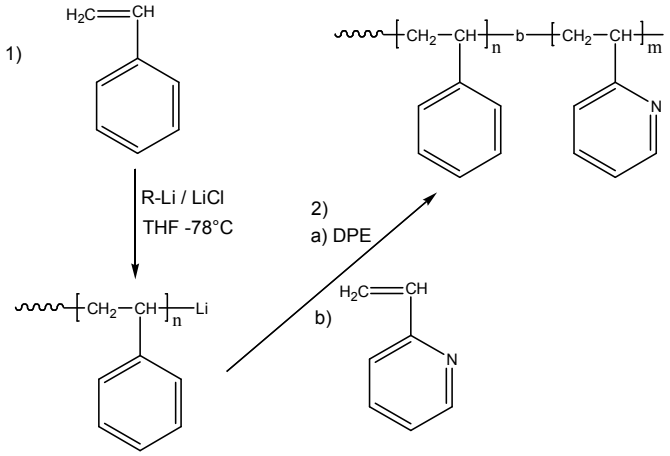


Composition:

Mn x 10^3 S-b-2VP	PDI
75.0-b-66.5	1.15

***Synthesis Procedure*:**

Poly(styrene-b-2-vinyl pyridine) is prepared by living anionic polymerization in THF at –78 °C in the presence of LiCl an additive. Polystyrene macroanions were end capped with a unit of diphenyl ethylene (DPE) before adding 2-vinylpyridine (2VP) monomer. For further details please see our published articles[1,2] The scheme of the reaction is illustrated below:



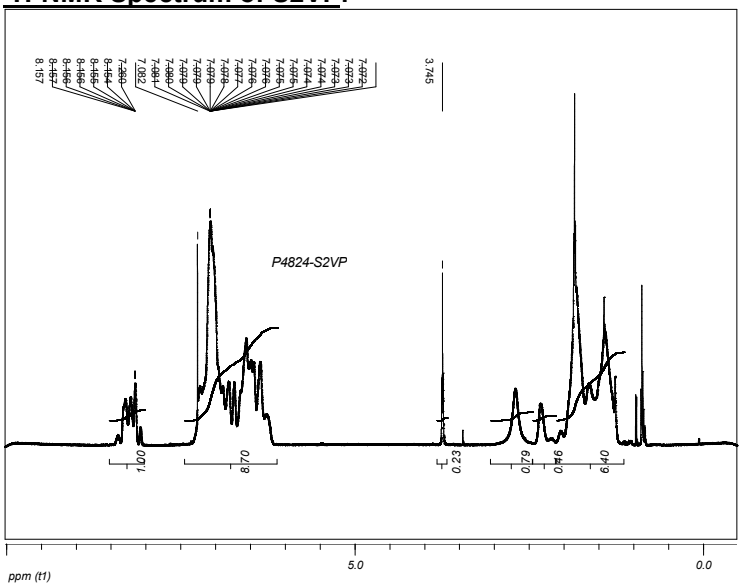
Characterization:

An aliquot of the anionic polystyrene block was terminated before addition of 2VP and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The Block copolymer composition was then calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the 2VP proton at 8.2 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/HClO4 using crystal violet indicator.Copolymer PDI is determined by SEC.

Solubility:

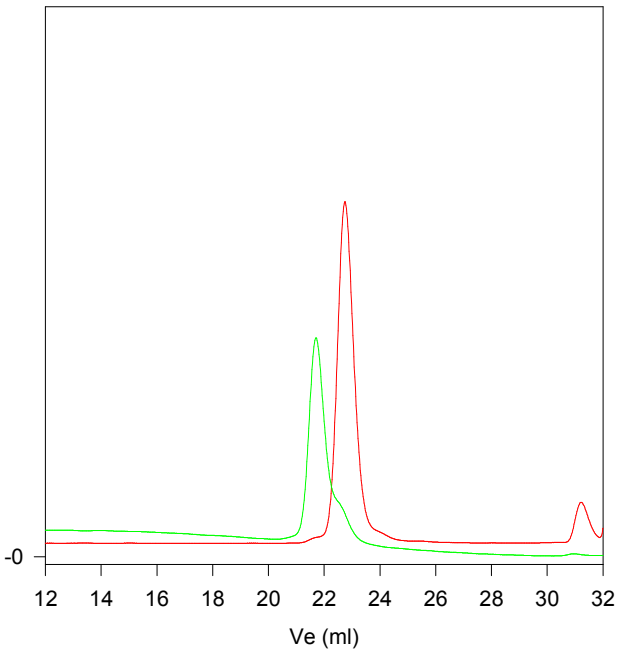
Poly(styrene-b-2 vinylpyridine) is soluble in THF, toluene, and $CHCl_3$. The diblock copolymer can also be solubilized in methanol, ethanol depending on its composition. The polymer readily precipitates from hexanes, ether and water.

^{1}H-NMR Spectrum of S2VP:



SEC of Sample

P4824-S2VP



Size exclusion chromatography of poly(styrene-b-2-vinyl pyridine)

Polystyrene, M_n=75000 Mw= 79500 PI=1.06

Polystyrene(75000)-b-Poly(2-vinyl pyridine)(66500),PI=1.15

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.