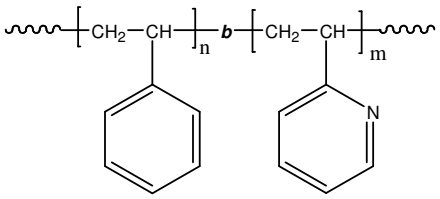
Sample Name: **Poly(styrene–b–2-vinyl pyridine)**

Sample #: **P4058-S2VP**

Structure:

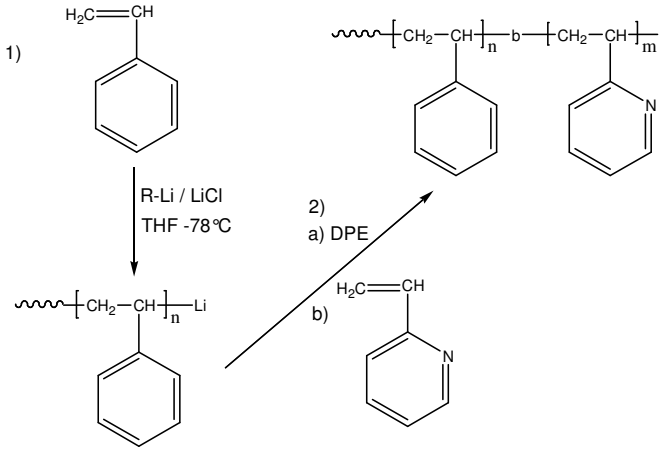


Composition:

Mn x 10^3 poly(S–*b*–2VP)	PDI
135.6–*b*–8.2	1.09

Synthesis procedure:

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



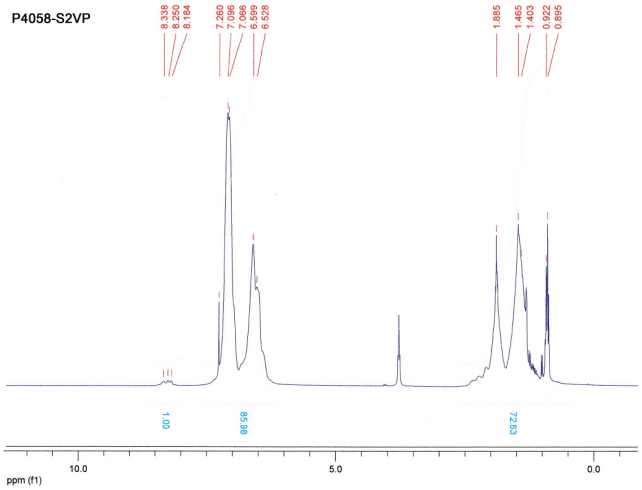
Characterization:

An aliquot of the anionic polystyrene was terminated before addition of 2VP and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI) of the first block. The block copolymer composition was calculated by ^{1}H-NMR spectroscopy by comparing the peak area of 2VP proton at 8.2 ppm with the peak area of aromatic protons of polystyrene at 6.3–7.2 ppm. The composition of block copolymer can also be determined by titration in acetic acid/$HClO_4$ using crystal violet indicator. PDI of diblock copolymer was determined by SEC.

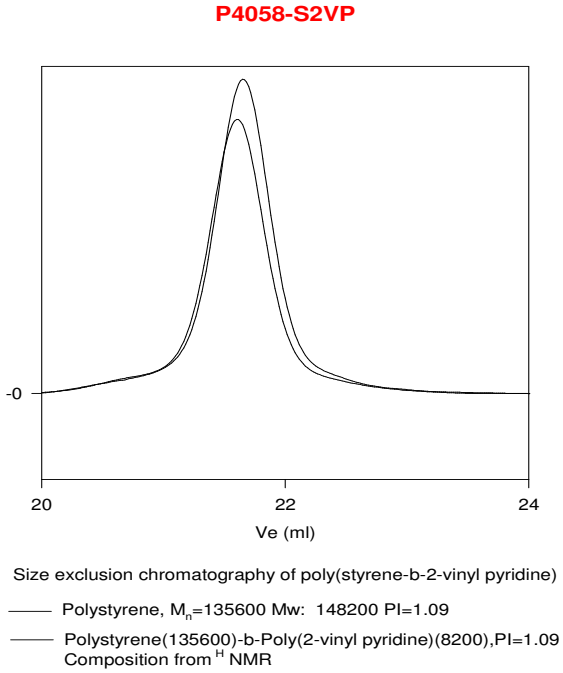
Solubility:

Poly(styrene–*b*–2 vinylpyridine) is soluble in THF, toluene, and chloroform . It can also be soluble in methanol or ethanol, depending on polymer composition (molecular weight and ratio between blocks). The polymer precipitates from hexanes, ether, and water.

^{1}H NMR spectrum of diblock copolymer in $CDCl_3$:



SEC elugrams of PS and PS-b-P2VP:



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.