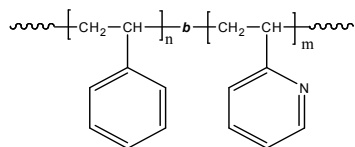


Sample Name: Poly(styrene-b-2-vinyl pyridine)

Sample #: P8890-S2VP

Structure:



Composition:

Mn x 10 ³ S-b-2VP	PDI
13.0-b-42.5	1.07
T _g for 2VP block	102°C
T _g for PS block	Not distinct

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}

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 further calculated from ¹H-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 also determined by SEC.

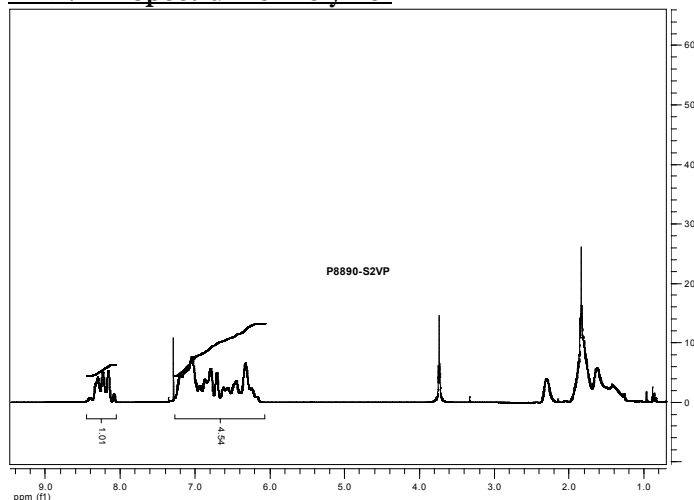
Thermal analysis

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 15°C/min. The inflection glass transition temperature (T_g) has been considered.

Solubility:

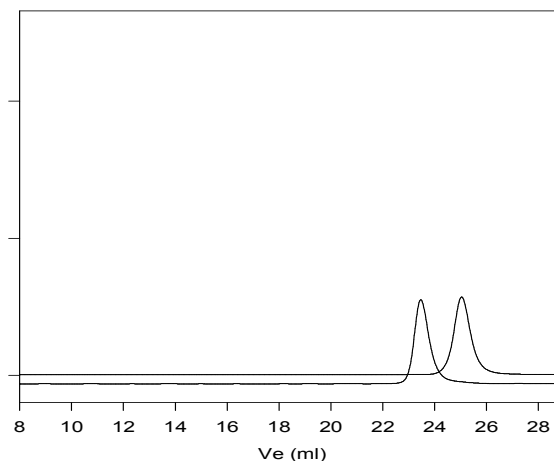
Poly(styrene-b-2 vinylpyridine) is soluble in THF, toluene, and CHCl₃. The diblock copolymer can also be solubilized in methanol, ethanol depending on its composition. The polymer readily precipitates from hexanes, ether and water.

¹H-NMR Spectrum of Polymer



SEC of Sample

P8890-S2VP

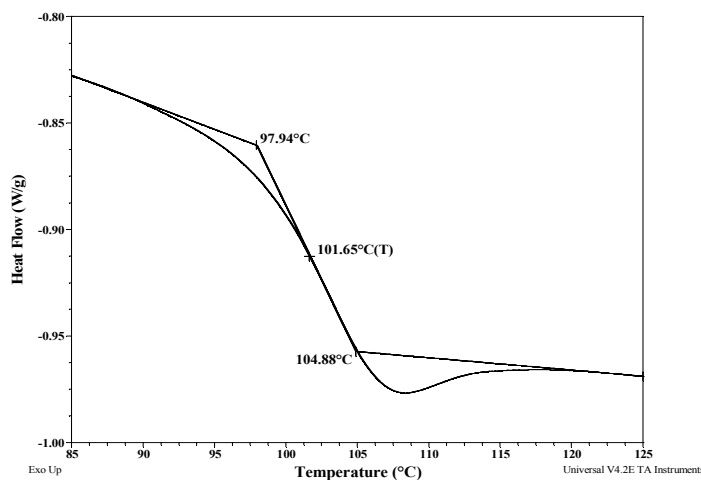


Size exclusion chromatography of poly(styrene-b-2-vinyl pyridine)

— Polystyrene, M_n=13,000 Mw= 13,800 PI=1.06

— Polystyrene(13,000)-b-Poly(2-vinyl pyridine)(42,500), PI=1.07

DSC thermogram for 2VP 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.