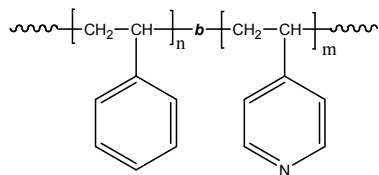


SEC of Sample # P138-S4VP: Lot #P4560

P9291-S4VP

Sample #: **P9291-S4VP**

Structure:



Composition:

Mn x 10 ³ PS-b-4VP	PDI
40.0-b-5.6	1.10
T _g for PS block: 103°C	T _g for 4VP block: 144°C

Synthesis Procedure:

Poly(styrene-*b*-4-vinyl pyridine) is prepared by living anionic polymerization in THF or THF–DMF solvent mixtures at -78°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.^{1,2}

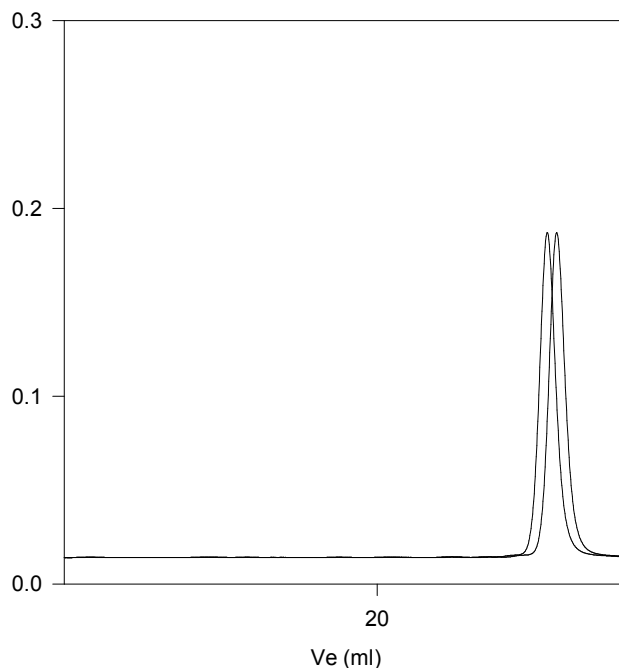
Characterization:

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 composition of the block copolymer was determined by titration in acetic acid/HClO₄ 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°C/min. The inflection glass transition temperature (T_g) of the sample has been considered.

Solubility:

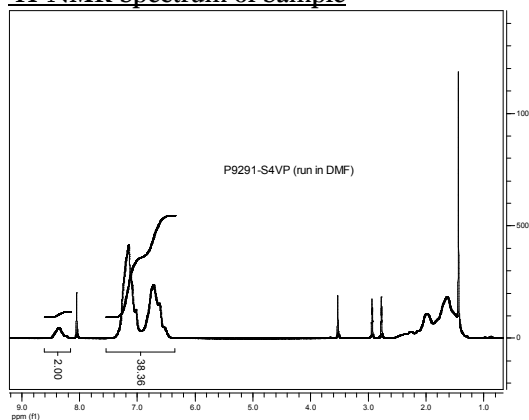
Poly(styrene-*b*-4-vinyl pyridine) is soluble in DMF, CHCl₃. The polymer can also be solubilized in THF depending on its chemical composition. The polymer readily precipitates from hexanes and diethyl ether.



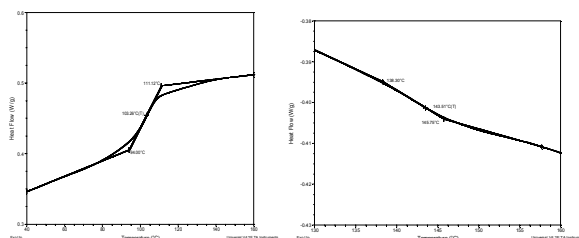
— SEC profile in DMF at 30 oC.
Polystyrene, $M_n=40000$, M_w : 42000 PI=1.05

—— Block Copolymer PS(40000)-b-P4VP(5600), PI=1.10
(composition by titration and by H NMR)

¹H-NMR Spectrum of Sample



Thermogram 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.