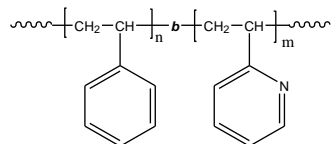


Sample Name: Poly(styrene-b-2-vinyl pyridine)

Sample #: P5747-S2VP

Structure:



Composition:

Mn x 10 ³ S-b-2VP	PDI
13.5-b-47.0	1.11
T _g for PS block: 100°C	T _g for 2VP block: 100°C

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:

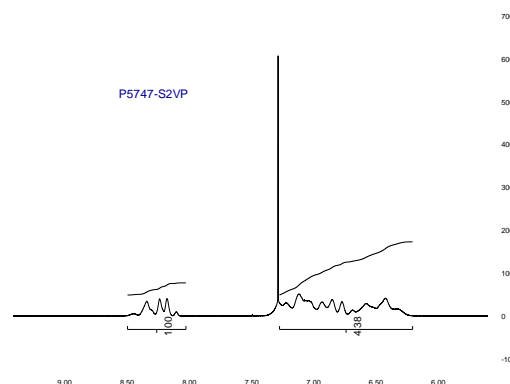
An aliquot of the anionic polystyrene block was terminated before addition of 2VP and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The composition of the block copolymer can also be determined by titration in acetic acid/HClO₄ using crystal violet indicator. Copolymer PDI is determined by SEC.

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:

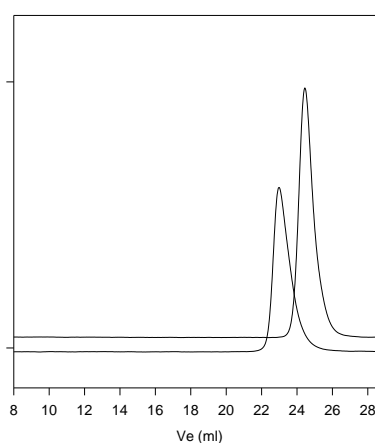
Poly(styrene-b-2 vinylpyridine) is soluble in THF, toluene, and CHCl₃. The diblock copolymer can also be solubilized in methanol, ethanol depending on its composition. The polymer readily precipitates from hexanes, ether and water.

¹HNMR of the Product:



SEC of the Sample:

P5747-S2VP

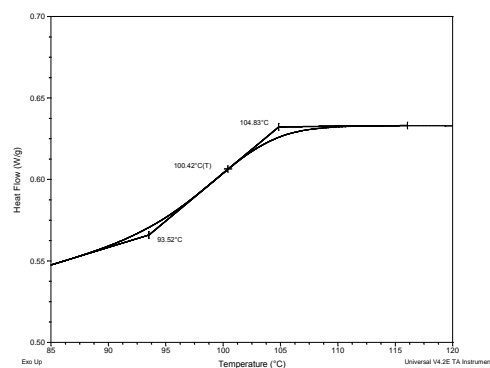


Size exclusion chromatography of poly(styrene-b-2-vinyl pyridine)

— Polystyrene, M_n=13,500 Mw: 14,200 PI=1.05

— Polystyrene(13,500)-b-Poly(47,000), PI=1.11

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.