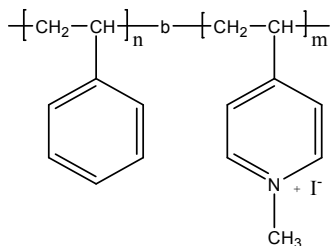


Sample Name: Poly(styrene-*b*- N-methyl 4-vinyl pyridine iodide)

Sample #: P4991-S4VPQ

Structure:

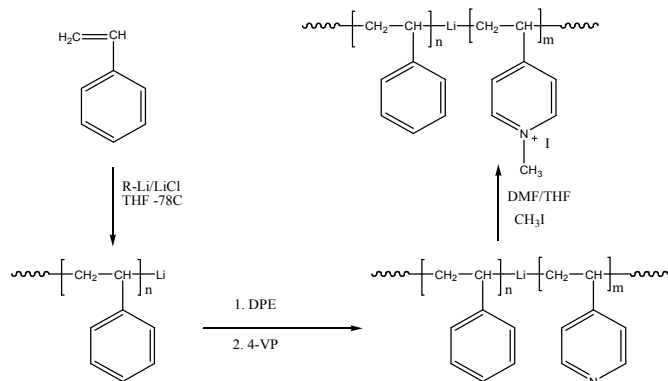


Composition:

Mn x 10 ³ PS- <i>b</i> -P4VPQ	PDI
122- <i>b</i> -51	1.15
T _g for PS block: 106°C	T _g for 4VPQ block: Not found

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} The scheme of the reaction is illustrated below:



Characterization:

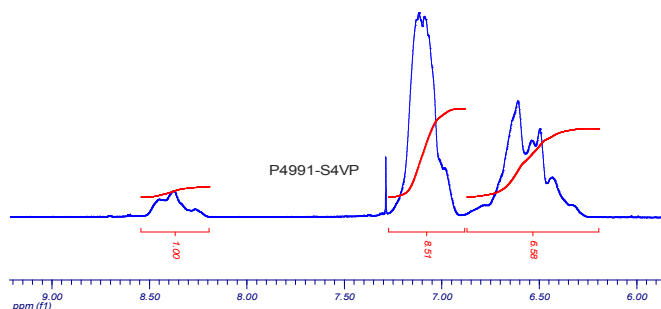
Polymer was analyzed by size exclusion chromatography (SEC) in DMF to obtain the molecular weight and polydispersity index (PDI). The composition of the block copolymer was determined by titration in acetic acid/HClO₄ using crystal violet indicator. Copolymer PDI is determined by SEC.

Quaternization. Polymer was dissolved in distilled DMF and distilled methyl iodide was added 2 molar in excess. The quaternized polymer was precipitated into hexane; filtered and washed with hexane several times. Finally resultant polymer was dried under vacuum and the yield of the polymer indicated quantitative quaternization. The quaternization was confirmed by the disappearance of the pyridine band at 1416cm⁻¹ as observed from FTIR.

Thermal analysis

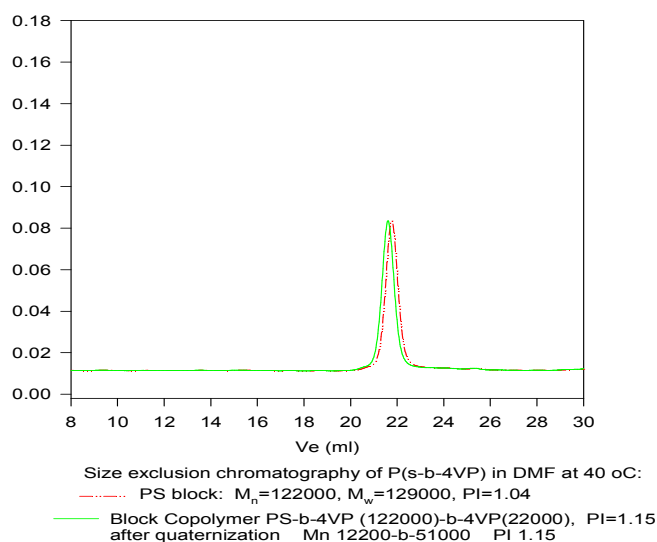
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

NMR of Precursor:

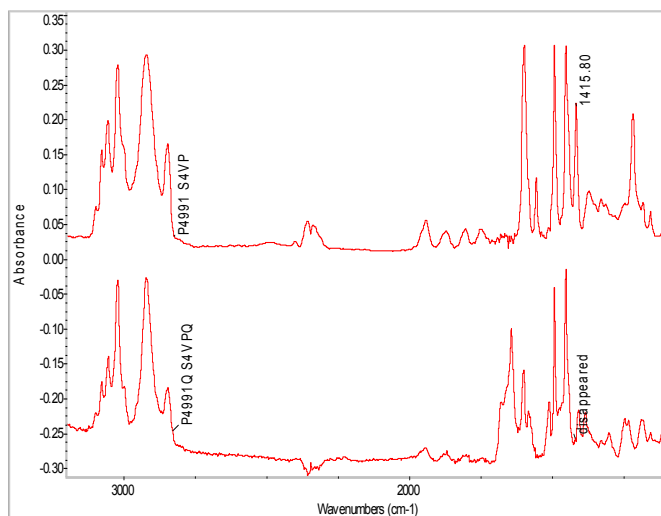


SEC of the block polymer:

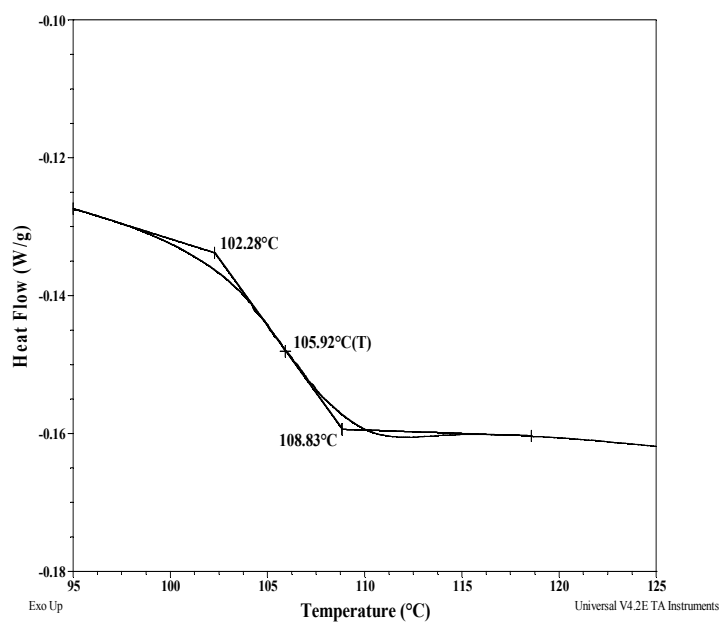
P4991-S4VP(precursor of P4991-S4VPQ)



FTIR of the product and precursor:



DSC thermogram for PS 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.