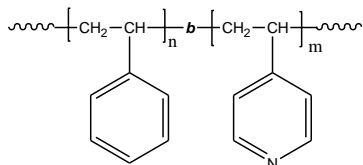


Sample Name: Poly(styrene-b-4-vinyl pyridine)

Sample #: P43209-S4VP

Structure:



Composition:

Mn × 10 ³ S-b-4VP	PDI
85.0-b-12.0	1.05

Tg for PS block: 104 °C
Tg for 4VP block: 153 °C

Synthesis Procedure:

Poly(styrene-b-4-vinyl pyridine) is prepared by living anionic polymerization in THF at -78 °C in the presence of LiCl as an additive.

Characterization:

The product was characterized by size exclusion chromatography (SEC) and ¹H NMR data analysis.

Solubility:

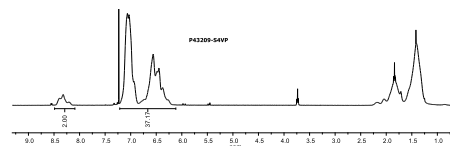
Poly(styrene-b-4 vinylpyridine) is soluble in THF, toluene, and CHCl₃. The diblock copolymer can also be solubilized in methanol, ethanol depending on its composition. The polymer readily precipitates from hexanes, ether, and water.

Purification:

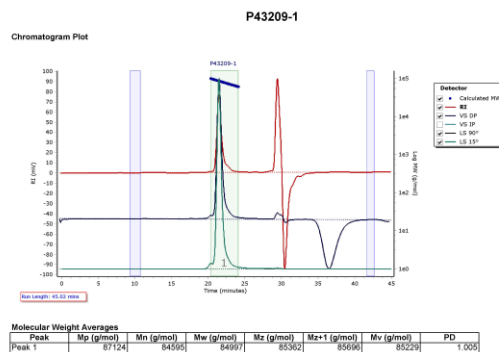
Purification of the obtained polymer was carried out rigorously as follows to ensure the removal of the catalyst side product:

1. Dissolved the polymer in CHCl₃ and wash with de-ionized distilled water to remove the any soluble organic catalyst side product.
2. Polymer extracted from water with chloroform.
3. Polymer solution in CHCl₃ was dried over anhydrous sodium sulfate.
4. Solution filtered and than passed through a column packed with basic Al₂O₃.
5. Solution concentrated on rota-evaporator.
6. Solution precipitated in cold hexane and redissolved in benzene and freeze dried.
7. Final dried under vacuum for 48h at 50°C.

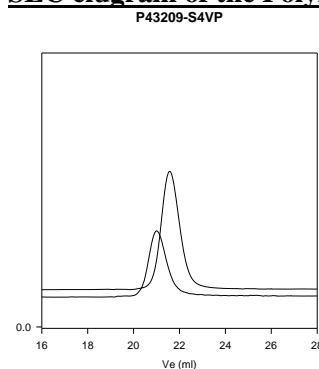
¹H NMR Spectrum of the Polymer



SEC elugram of the PS Block:

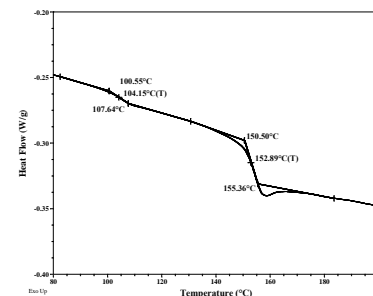


SEC elugram of the Polymer:



Size exclusion chromatography of P(s-b-4VP) in DMF at 40 °C:
— PS block: M_n=85,000, M_w=85,200, PI=1.01
— Block Copolymer PS-4VP (85,000)-b-4VP(12,000), PI=1.05

DSC thermogram for the 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.