

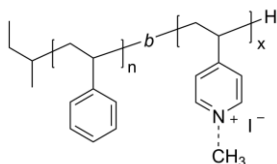
**Sample Name:** Poly(styrene)-b-oligo(4-vinyl pyridine, quaternized with methyl iodide)

*Bearing different degree of 4VP units*

**Synonym:** Polystyrene-b-oligo(N-methyl 4-vinyl pyridinium iodide)

**Sample #:** P43802A-S4VPQ

**Structure:**



**Composition:**

Mn $\times 10^3$ S-b-4VPQ	PDI
22.0-b-0.5	1.02

Dp of each unit 211-b-2
Tg for PS block: 104 °C

**Synthesis Procedure:**

Polymers were prepared by living anionic polymerization in THF at  $-78^\circ\text{C}$  in the presence of LiCl as an additive.

**Characterization:**

The product was characterized by size exclusion chromatography (SEC) and  $^1\text{H}$  NMR and FTIR data analysis.

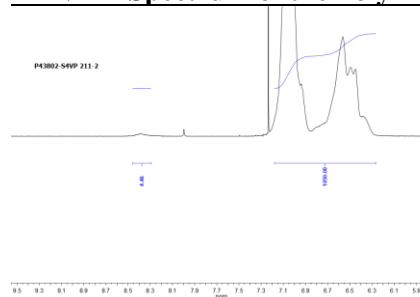
**Purification:**

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

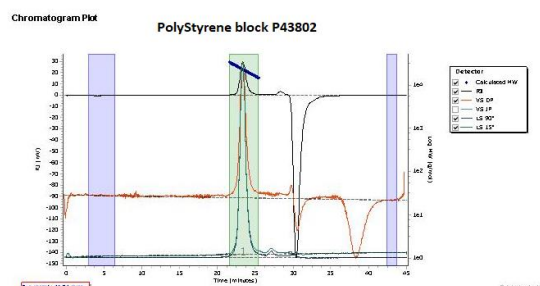
1. Dissolved the polymer in  $\text{CHCl}_3$  and wash with de-ionized distilled water to remove the any soluble organic catalyst side product.
2. Polymer extracted from water with chloroform.
3. Polymer solution in  $\text{CHCl}_3$  was dried over anhydrous sodium sulfate.

4. Solution filtered and then passed through a column packed with basic  $\text{Al}_2\text{O}_3$ .
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  $50^\circ\text{C}$ .

**$^1\text{H}$  NMR Spectrum of the Polymer:**

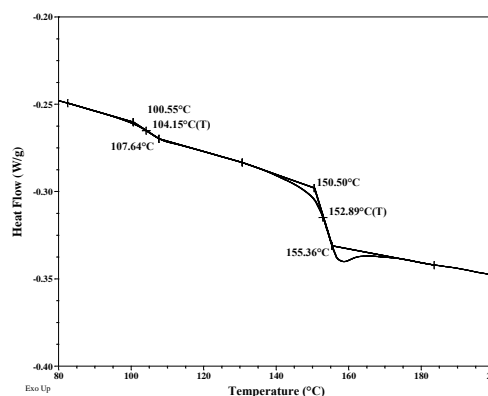


**SEC elugram of the PolyStyrene block:**

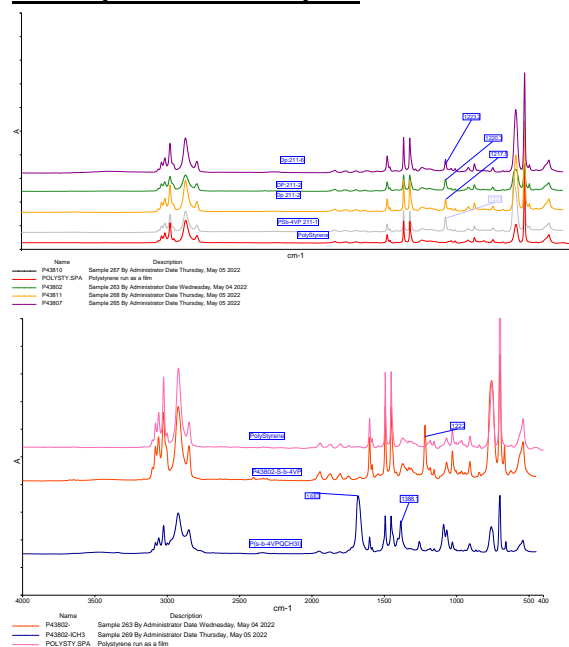


Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz:1 (g/mol)	Mw (g/mol)	PDI
Peak 1	23113	22353	22654	22636	23212	22879	1.013

**DSC thermogram for the PS block:**



## FTIR spectrum of Samples:



## 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.