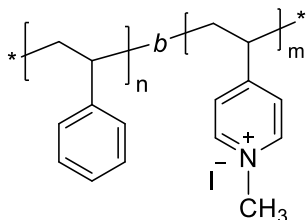


**Product Name:** Poly(styrene)-*b*-poly(4-vinyl pyridine, quaternized with methyl iodide)

**Other name:** Polystyrene-*b*-poly(N-methyl 4-vinyl pyridinium iodide)

**Product ID #** P561-S4VPQ

**Structure:**

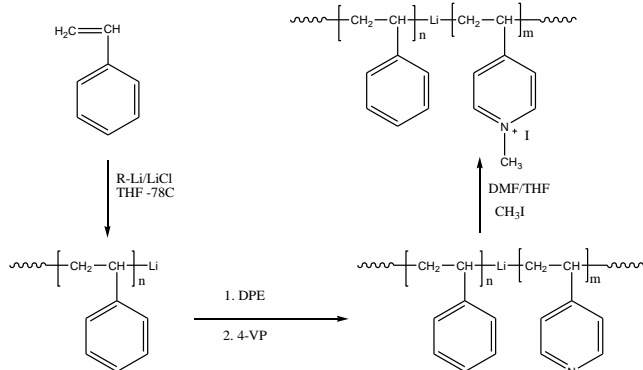


**Composition:**

$M_n \times 10^3$ (g/mol) [PS- <i>b</i> -P4VPQ]	$M_w/M_n$
18.6-131.3	1.26

**Synthesis Procedure:**

Poly(styrene-*block*-4-vinylpyridine) was prepared by living anionic polymerization in THF or THF/DMF solvent mixtures at  $-78^\circ\text{C}$ . The scheme of reaction is shown below. More details are presented in our articles [ref. 1, 2].



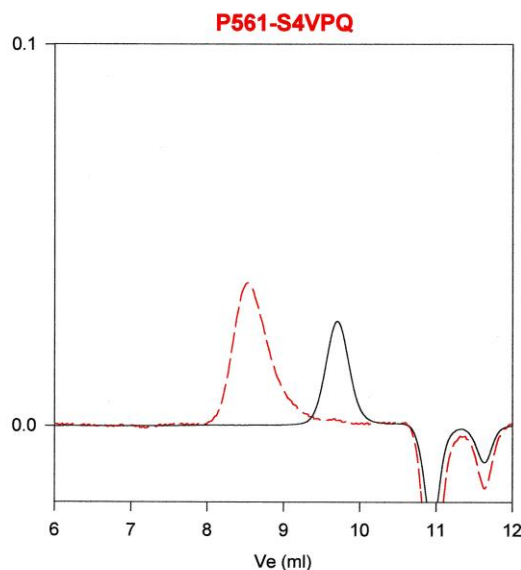
**Quaternization:**

PS-P4VP diblock copolymer was dissolved in distilled DMF, and the distilled methyl iodide (2 molar excess) was added to the above solution. The quaternized polymer was precipitated into hexane, filtered, washed with hexane vigorously, and dried under vacuum for 8 hrs. The yield of the polymer pointed to the quantitative quaternization of the starting material.

**Characterization:**

The molecular weight and polydispersity index were determined for PS-P4VP polymer by size exclusion chromatography (SEC) in DMF, and the final molecular weight of the quaternized polymer was calculated accordingly. The composition of the diblock copolymer was determined by titration in acetic acid/HClO<sub>4</sub> using crystal violet indicator. The quaternization of PS-P4VP with MeI was confirmed by FT-IR spectroscopy: the pyridine band at  $1416\text{ cm}^{-1}$  disappeared.

**SEC chromatogram:**



Size Exclusion Chromatography of polystyrene-*b*-poly(4-vinyl pyridine)

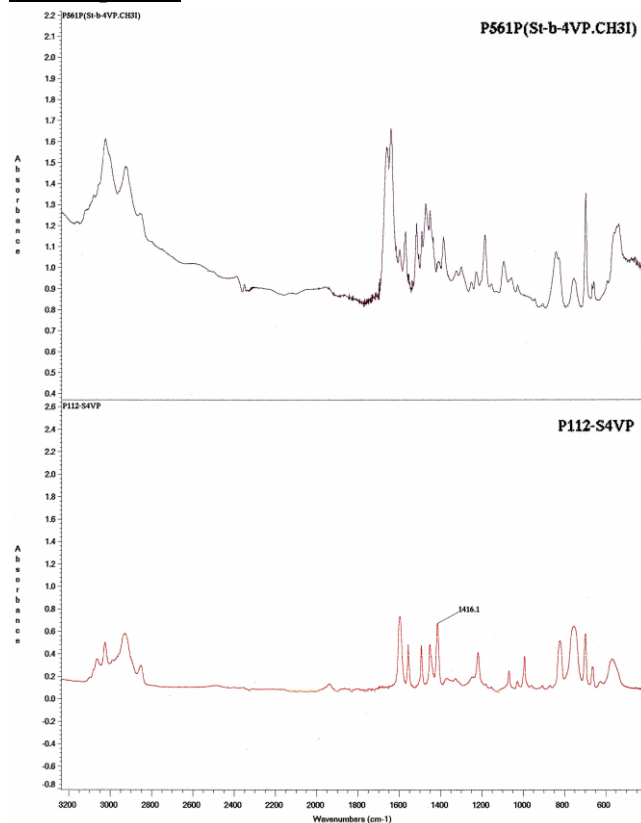
[precursor for P561S4VPQ]:

— Polystyrene,  $M_n=18600$ ,  $PI=1.10$

- - - Polystyrene(18600)-*b*-Poly(4-vinyl pyridine)(55800),  $PI=1.26$

Polystyrene(18600)-*b*-Poly(N-methyl 4-vinyl pyridinium iodide)(131300),  $PI=1.26$

**FT-IR spectra:**



**References:**

- [1] S. K. Varshney, X. F. Zhong, and A. Eisenberg; *Macromolecules* 1993, 26, 701–706.
- [2] Z. Gao, S. K. Varshney, S. Wong, and A. Eisenberg; *Macromolecules* 1994, 27, 7923–7927.