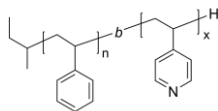


### Bearing different degree of 4VP units

### Structure:



Mn $\times 10^3$ S-b-4VP	PDI
28.0-b-0.1	1.01

Dp of each unit 270-b-1
Tg for PS block: 104 °C

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

The product was characterized by size exclusion chromatography (SEC) and <sup>1</sup>H NMR and FTIR data analysis.

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 than 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  $50^\circ\text{C}$ .

Chromatogram Pk1

Time (minutes)

AU (a.u.)

Legend:

- x Cal eluent mix
- M M
- M-1 M-1
- M-2 M-2
- M-3 M-3
- M-4 M-4

M-2 eluent mix M-2 mix

100% H<sub>2</sub>O

Figure 1 is a DSC thermogram of poly(2-vinylpyridine). The y-axis represents Heat Flow (W/g) ranging from -0.40 to -0.20. The x-axis represents Temperature (°C) ranging from 80 to 200. The curve shows a broad endothermic peak characteristic of a glass transition. Key inflection points are labeled with their temperatures: 100.55°C, 104.15°C(T), 107.64°C, 150.50°C, 152.89°C(T), and 155.36°C. The label 'Exo Up' is located at the bottom left of the plot area.

Figure 1 displays five stacked IR spectra (A vs.  $\text{cm}^{-1}$ ) for different samples. The x-axis ranges from 4000 to 600  $\text{cm}^{-1}$ . The spectra are labeled as follows:

- PSB119** (purple line)
- POLYSTY-SPA** (green line)
- PSB32** (orange line)
- PA3B11** (red line)
- PSB407** (grey line)

Key peaks are identified with labels and arrows:

- 3085** (aromatic C-H stretch)
- 3060** (aromatic C-H stretch)
- 3025** (aromatic C-H stretch)
- 3010** (aromatic C-H stretch)
- 3000** (aromatic C-H stretch)
- 2925** (aromatic C-H stretch)
- 2900** (aromatic C-H stretch)
- 2850** (aromatic C-H stretch)
- 2825** (aromatic C-H stretch)
- 2800** (aromatic C-H stretch)
- 2750** (aromatic C-H stretch)
- 2725** (aromatic C-H stretch)
- 2700** (aromatic C-H stretch)
- 2650** (aromatic C-H stretch)
- 2625** (aromatic C-H stretch)
- 2600** (aromatic C-H stretch)
- 2550** (aromatic C-H stretch)
- 2525** (aromatic C-H stretch)
- 2500** (aromatic C-H stretch)
- 2450** (aromatic C-H stretch)
- 2425** (aromatic C-H stretch)
- 2400** (aromatic C-H stretch)
- 2350** (aromatic C-H stretch)
- 2325** (aromatic C-H stretch)
- 2300** (aromatic C-H stretch)
- 2250** (aromatic C-H stretch)
- 2225** (aromatic C-H stretch)
- 2200** (aromatic C-H stretch)
- 2150** (aromatic C-H stretch)
- 2125** (aromatic C-H stretch)
- 2100** (aromatic C-H stretch)
- 2050** (aromatic C-H stretch)
- 2025** (aromatic C-H stretch)
- 2000** (aromatic C-H stretch)
- 1950** (aromatic C-H stretch)
- 1925** (aromatic C-H stretch)
- 1900** (aromatic C-H stretch)
- 1850** (aromatic C-H stretch)
- 1825** (aromatic C-H stretch)
- 1800** (aromatic C-H stretch)
- 1750** (aromatic C-H stretch)
- 1725** (aromatic C-H stretch)
- 1700** (aromatic C-H stretch)
- 1650** (aromatic C-H stretch)
- 1625** (aromatic C-H stretch)
- 1600** (aromatic C-H stretch)
- 1550** (aromatic C-H stretch)
- 1525** (aromatic C-H stretch)
- 1500** (aromatic C-H stretch)
- 1450** (aromatic C-H stretch)
- 1425** (aromatic C-H stretch)
- 1400** (aromatic C-H stretch)
- 1350** (aromatic C-H stretch)
- 1325** (aromatic C-H stretch)
- 1300** (aromatic C-H stretch)
- 1250** (aromatic C-H stretch)
- 1225** (aromatic C-H stretch)
- 1200** (aromatic C-H stretch)
- 1150** (aromatic C-H stretch)
- 1125** (aromatic C-H stretch)
- 1100** (aromatic C-H stretch)
- 1050** (aromatic C-H stretch)
- 1025** (aromatic C-H stretch)
- 1000** (aromatic C-H stretch)
- 950** (aromatic C-H stretch)
- 925** (aromatic C-H stretch)
- 900** (aromatic C-H stretch)
- 850** (aromatic C-H stretch)
- 825** (aromatic C-H stretch)
- 800** (aromatic C-H stretch)
- 750** (aromatic C-H stretch)
- 725** (aromatic C-H stretch)
- 700** (aromatic C-H stretch)
- 650** (aromatic C-H stretch)
- 625** (aromatic C-H stretch)
- 600** (aromatic C-H stretch)

The legend at the bottom identifies the samples and their corresponding colors:

- PSB119** (purple line)
- POLYSTY-SPA** (green line)
- PSB32** (orange line)
- PA3B11** (red line)
- PSB407** (grey line)

The description for each sample is:

- Sample 267 By Administrator Data Thursday, May 05 2022**
- Polystyrene run as a film**
- Sample 263 By Administrator Data Wednesday, May 04 2022**
- Sample 268 By Administrator Data Thursday, May 05 2022**
- Sample 265 By Administrator Data Thursday, May 05 2022**

- (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.