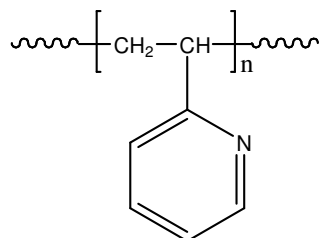


**Sample Name:** Poly(2-vinyl pyridine)

**Sample #:** P9772-2VP

**Structure:**

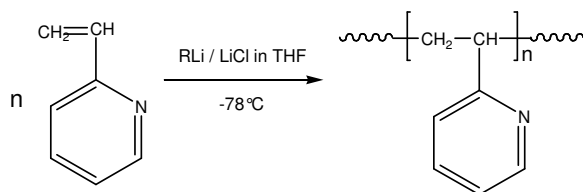


**Composition:**

|                             |           |
|-----------------------------|-----------|
| $M_n \times 10^3$           | PDI       |
| 7.3                         | 1.14      |
| 5.5<br>(w.r.t PS reference) | 1.14      |
| dn/dc                       | 0.167ml/g |

**Synthesis Procedure:**

Poly(2-vinyl pyridine) is obtained by living anionic polymerization of 2-vinyl pyridine using an adduct of Sec. butyllithium and diphenyl ethylene-LiCl. Polymerization is carried out in THF at  $-78^\circ\text{C}$ . Polymerization reaction is terminated using degassed methanol. The reaction scheme is illustrated as follows:



**Characterization:**

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co.

Thermal analysis was performed on TA Instruments Q100 differential scanning calorimeter (DSC) under a nitrogen atmosphere. The glass transition temperature ( $T_g$ ) of the polymer was measured at a scan rate of

$10^\circ\text{C}/\text{min}$  shortly after creating thermal history of the sample.

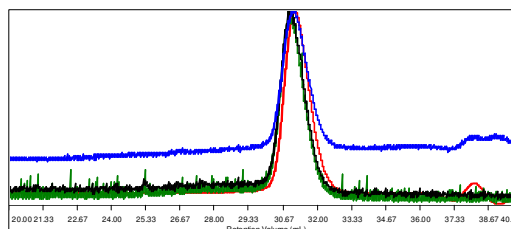
**Solubility:**

Poly 2 vinylpyridine is soluble in DMF, THF, toluene, methanol, ethanol and  $\text{CHCl}_3$ . It precipitates from water and hexane and ether.

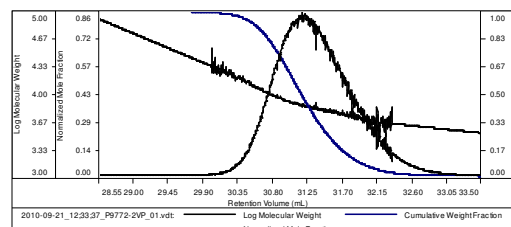
**SES elugram of the polymer:**

Sample ID: P9772-2VP

|               |                 |
|---------------|-----------------|
| Concentration | 2.9938          |
| Sample dn/dc  | 0.1670          |
| Method File   | PS09K-0024.vcm  |
| Column Set    | 3x PL 1113-6300 |
| System        | System 1        |



| Sample                               | Mn    | Mw    | Mz     | Mw/Mn | IV     | Rh   |
|--------------------------------------|-------|-------|--------|-------|--------|------|
| 2010-09-21_12:33:37_P9772-2VP_01.vdt | 7,377 | 8,436 | 11,096 | 1.144 | 0.0641 | 2.63 |



**Relationship between  $T_g$  and  $M_n$  of P2VP:**

