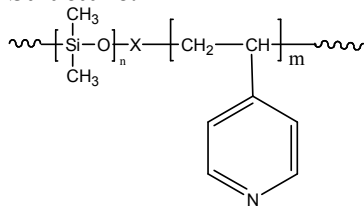


## Sample Name: Poly(4-vinyl pyridine-b-dimethylsiloxane)

Sample #: P5671A-4VPDMS

### Structure:



### Composition:

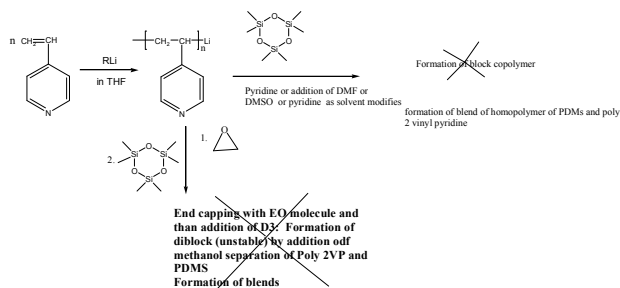
$M_n \times 10^3$ 4VP-b-DMS	Mw/Mn
1.0-b-5.0	1.2

### Synthesis Procedure:

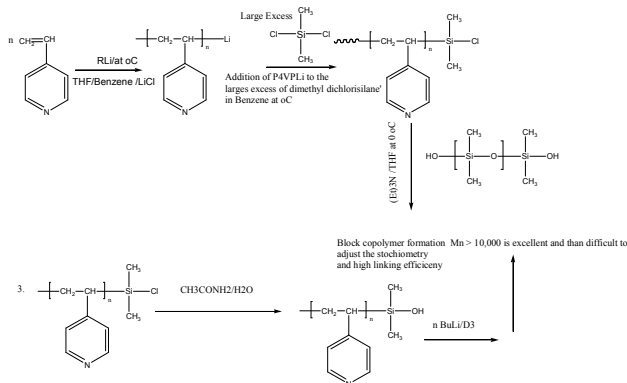
Poly(4-vinyl pyridine-b-dimethylsiloxane) is synthesized by By controlled radical process. Since it is synthesized by such technique, the obtained polymer is dark brown in spite of using purification columns.

Differnt routes for the synthesis of poly 4 vinyl pyridine with polydimethyl siloxane:

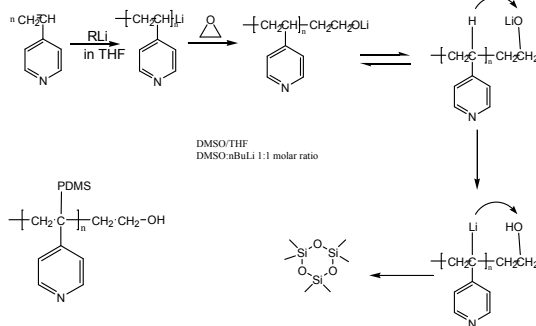
1. Direct Anionic Polymerization by sequential addition of 2VP followed by D3 monomer



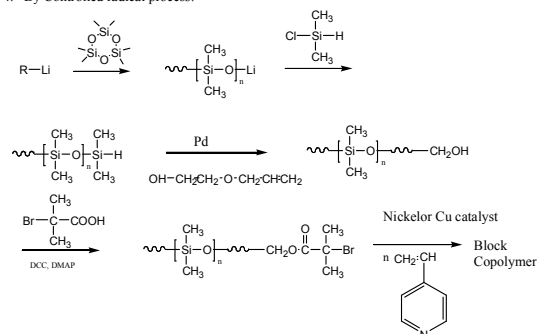
2. From the linking reaction of end functionalized polymer: For the synthesis of Block copolymer > Mn 10,000



3. Formation of first Poly 4vinyl pyridine OH terminated polymer than reacting the isolated P4VPOH polymer with n BuLi followed by addition of D3 in the presence of DMSO equimolar amount with nBuLi



4. By Controlled radical process:



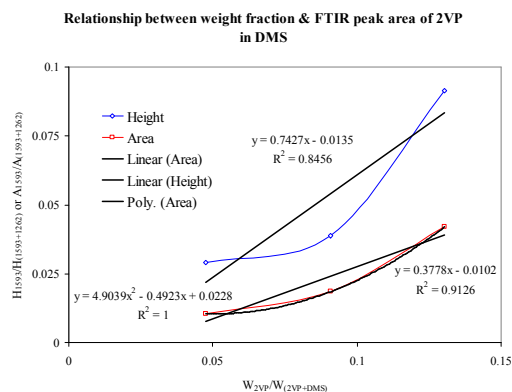
### Characterization:

Polymers were analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The block copolymer composition was then calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the 2-vinyl pyridine proton at about 8.2 ppm with the dimethyl siloxane protons at 0.08 ppm. Copolymer PDI is determined by SEC.

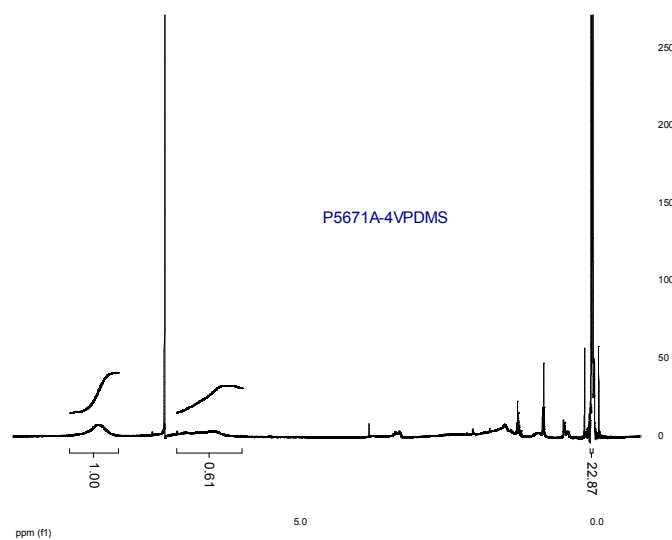
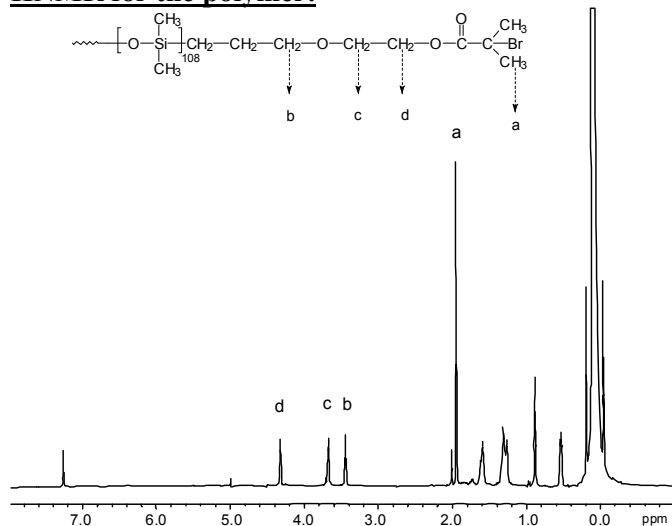
### Solubility:

Poly(4-vinyl pyridine-b-dimethyl siloxane) is soluble in THF, CHCl<sub>3</sub> and toluene.

**FTIR:** The Composition of the polymer was also checked by FTIR.

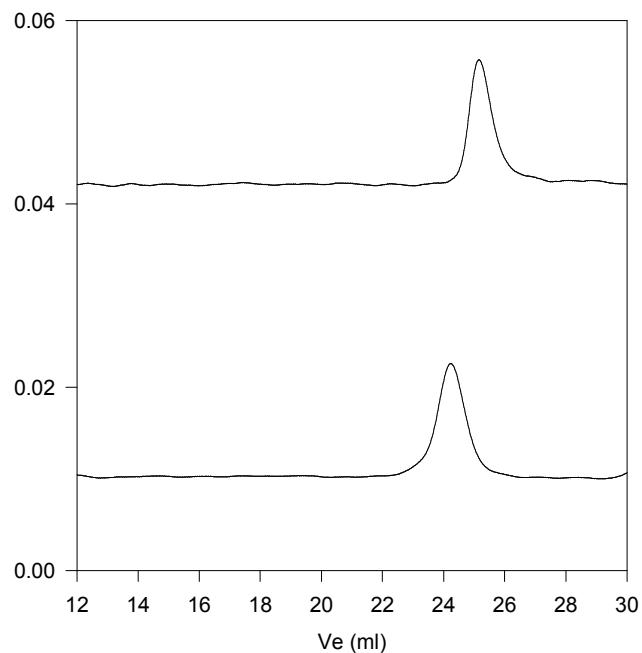


## HNMR for the polymer:



## SEC of the Polymer:

**P5671A-4VPDMS**



Size exclusion chromatography of

- Poly(dimethylsiloxane),  $M_n=5000$  Mw: 5500 Mw/Mn 1.10
  - Block Copolymer P4VP(1000)-b-PDMS(5000), PI= 1.2 run in  $\text{CHCl}_3$
- Composition for  $^1\text{H}$  NMR