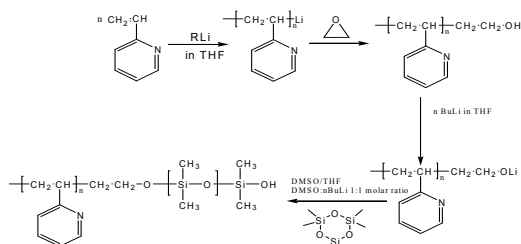
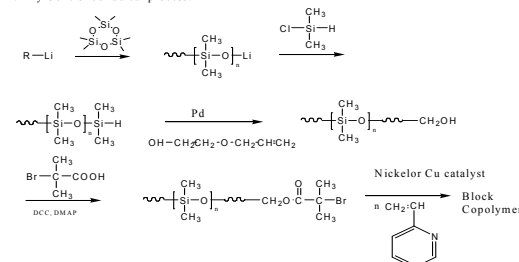


3. Formation of first Poly 2vinyl pyridine OH terminated polymer than reacting the isolated P2VPOH polymer with n BuLi followed by addition of D3 in the presence of DMSO equimolar amount with nBuLi



High purity diblock copolymer formation

4. By Controlled radical process:

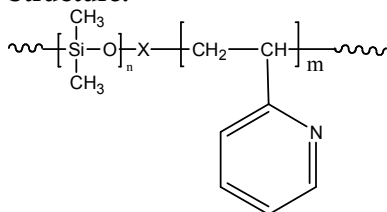


**Sample Name:** Poly(2-vinyl pyridine-b-dimethylsiloxane)

**Sample #:** P5365-2VPDMS

**By controlled radical process**

**Structure:**



**Composition:**

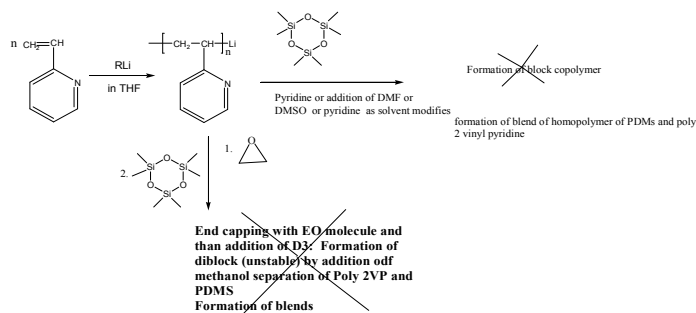
$M_n \times 10^3$ 2VP-b-DMS	$M_w/M_n$
0.6-b-30.0	1.15

**Synthesis Procedure:**

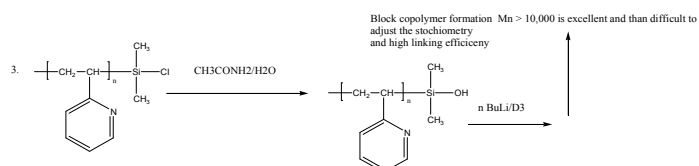
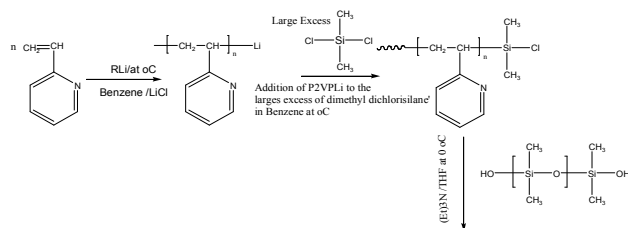
Poly(2-vinyl pyridine-b-dimethylsiloxane) is synthesized by one of the following routes.

Different routes for the synthesis of poly 2 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



**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  $^1\text{H-NMR}$  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.

**Thermal analysis:**

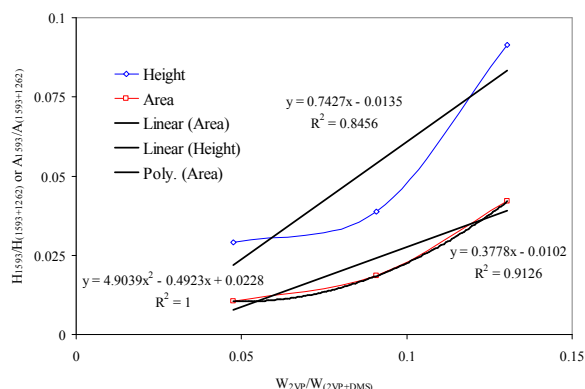
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of  $10^\circ\text{C}/\text{min}$ . The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ). The melting temperature ( $T_m$ ) of the DMS was taken as the maximum of the endothermic peak in the thermogram.

**Solubility:**

Poly(2-vinyl pyridine-b-dimethyl siloxane) is soluble in THF,  $\text{CHCl}_3$  and toluene.

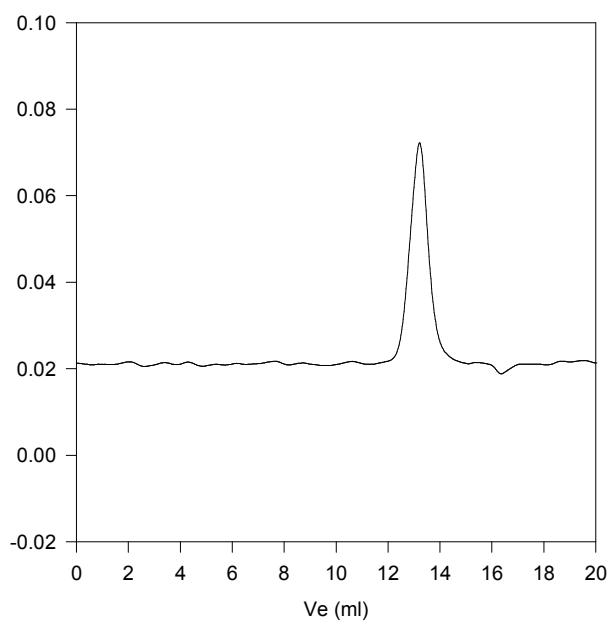
**FTIR: Com,position of the Polymer also checked by FTIR:**

Relationship between weight fraction & FTIR peak area of 2VP in DMS



## SEC for the polymer:

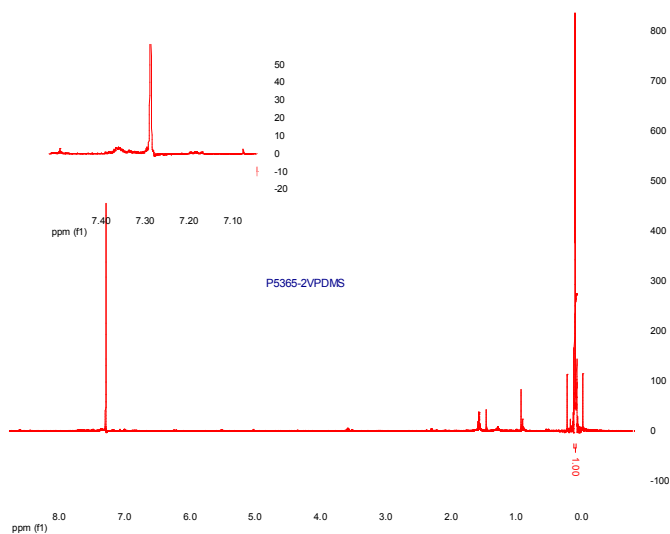
**P5365-2VPDMS in toluene**



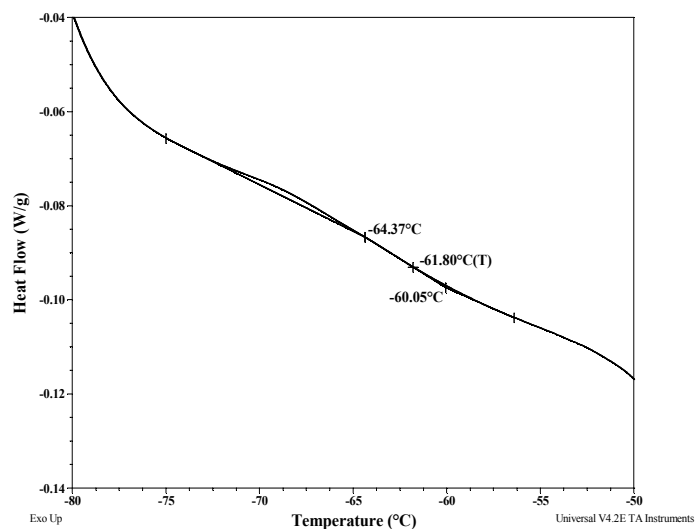
Size exclusion chromatography of the final polymer in Toluene

— Block Copolymer P2VP(600)-b-PDMS(33000), PI= 1.15  
Composition for  $^1\text{H}$  NMR

## $^1\text{H}$ NMR for the polymer:



## Thermogram for DMS block:



## Melting curve for DMS block:

