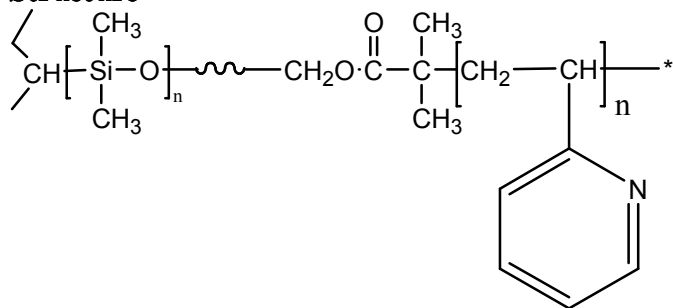


Sample Name: Poly(2-vinyl pyridine-b-dimethylsiloxane)

Sample #: P5666-2VPDMS

This lot by controlled radical process

Structure:



Composition:

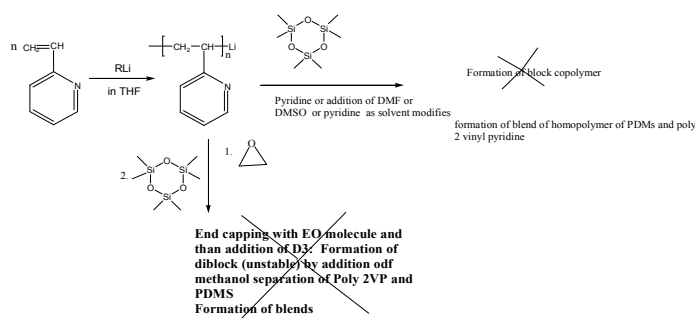
$M_n \times 10^3$ 2VP-b-DMS	Mw/Mn
6.0-b-5.0	1.26

Synthesis Procedure:

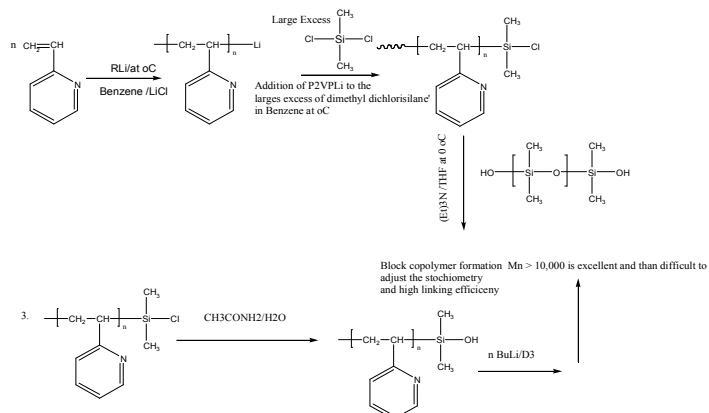
Poly(2-vinyl pyridine-b-dimethylsiloxane) is synthesized by one of the following routes.

Different routes for the synthesis of poly 2 vinyl pyridine with polydimethyl siloxane:

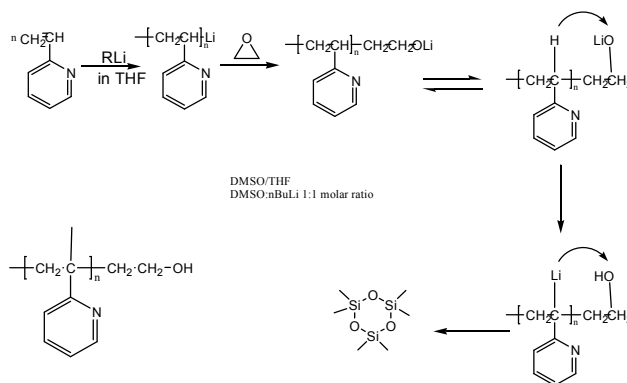
1. Direct Anionic Polymerization by sequential addition of 2VP followed by D3 monomer



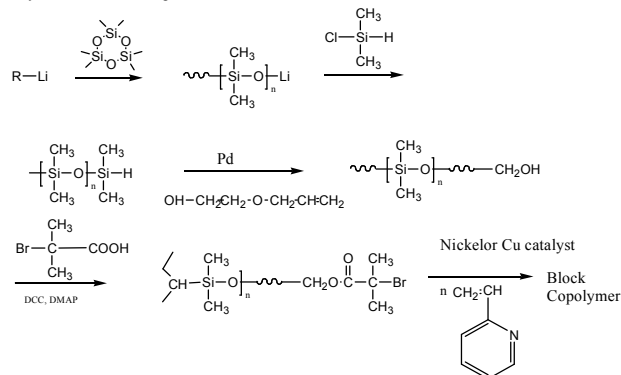
2. From the linking reaction of end functionalized polymer: For the synthesis of Block copolymer > Mn 10,000



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



4. By Controlled radical process:

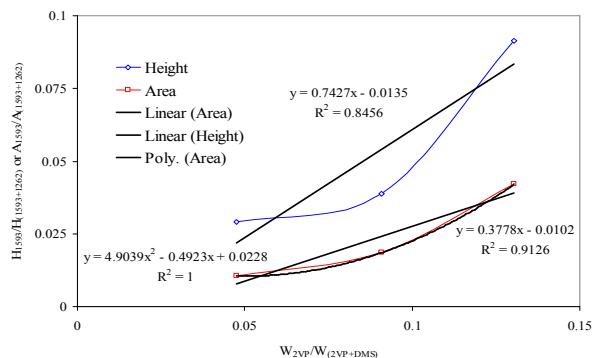


Characterization:

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 ¹H-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.

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

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



Solubility:

Poly(2-vinyl pyridine-b-dimethyl siloxane) is soluble in THF, CHCl₃ and toluene.

Contd. in next page

Thermal analysis:

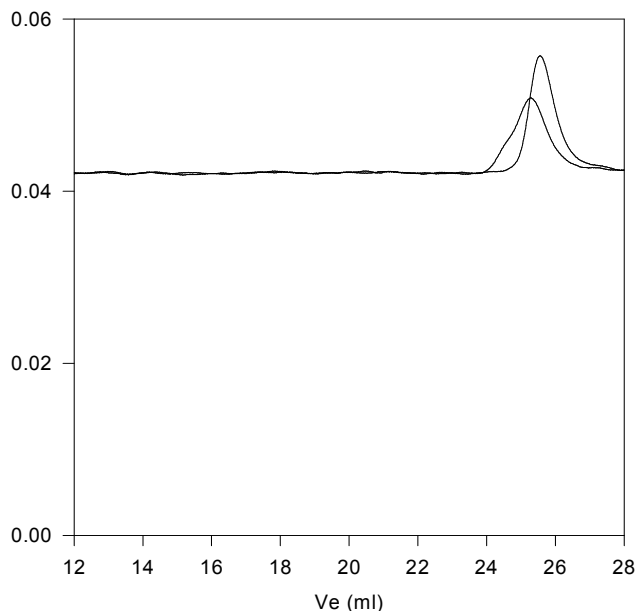
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g). The melting temperature (T_m) of the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

Thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
2VP block	-	-	20
DMS block	-48	-58	-127 (Lit.)

SEC for the polymer:

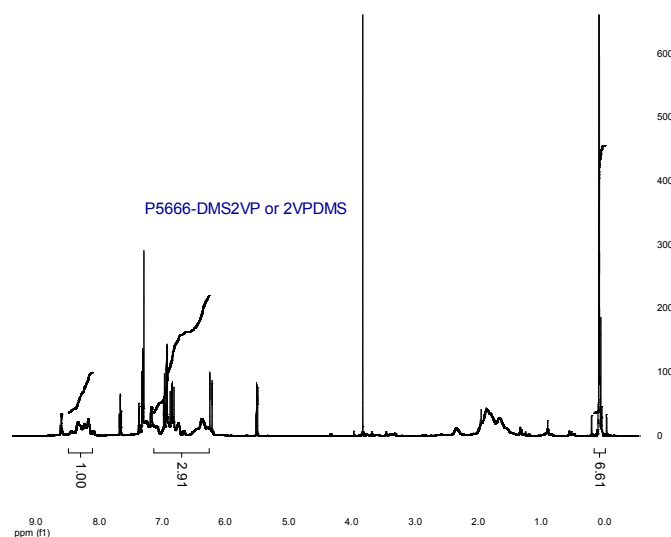
P5666-2VPDMS



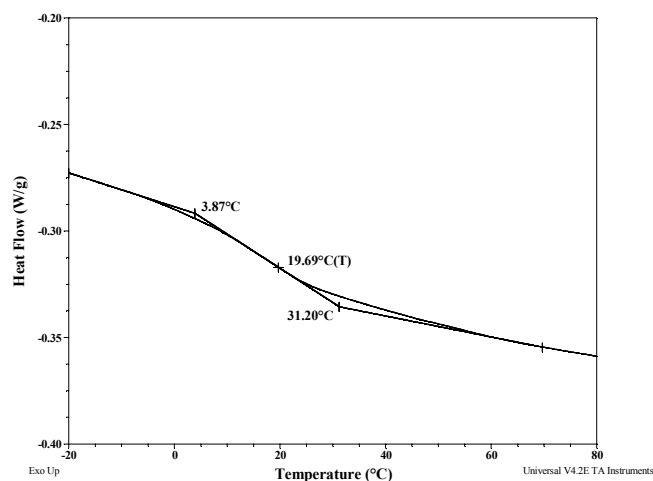
Size exclusion chromatography of

- Poly(dimethylsiloxane), M_n =5000 Mw: 5500 Mw/Mn 1.10
 - - - Block Copolymer P2VP(6000)-b-PDMS(5000), PI= 1.26
- Composition for 1H NMR

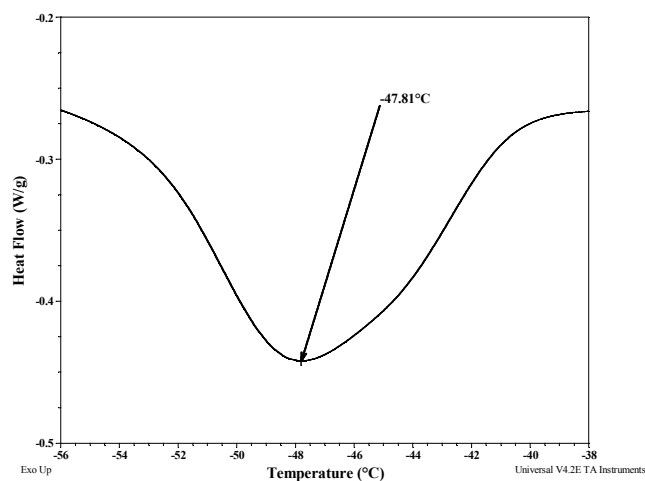
1H NMR for the polymer:



DSC thermogram for 2VP block:



Melting curve for DMS block:



Crystallization curve for DMS block:

