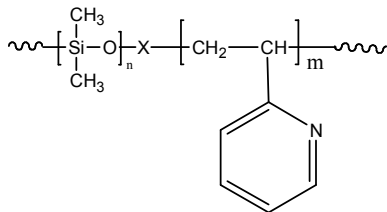


Sample Name: Poly(2-vinyl pyridine-b-dimethylsiloxane)

Sample #: P6574-2VPDMS

By controlled radical process

Structure:



Composition:

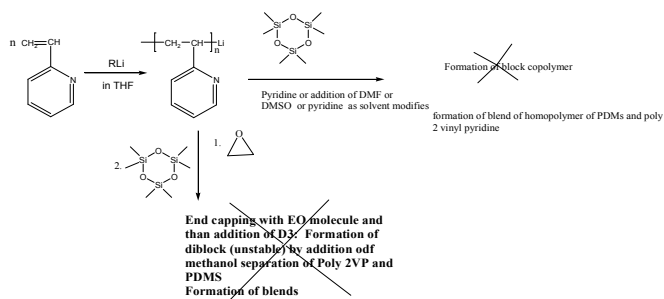
$M_n \times 10^3$ 2VP-b-DMS	M_w/M_n
0.5-b-10.0	1.15

Synthesis Procedure:

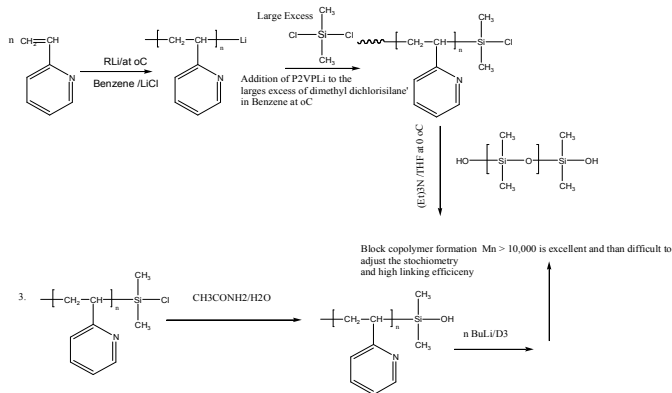
Poly(2-vinyl pyridine-b-dimethylsiloxane) is synthesized by one of the following routes.

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

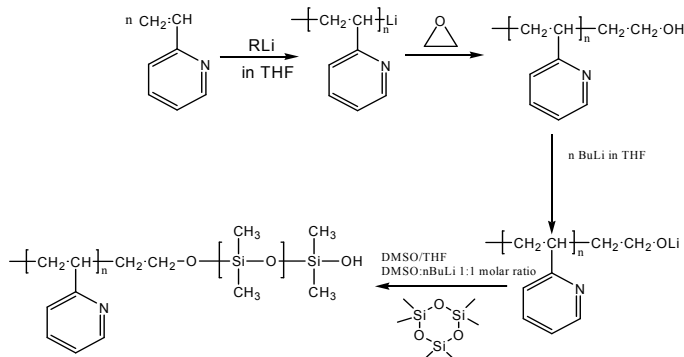
1. Direct Anionic Polymerization by sequential addition of 2VP followed by D3 monomer



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

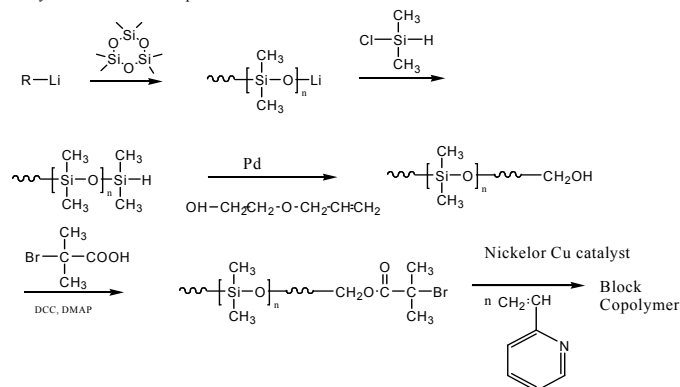


3. Formation of first Poly 2vinyl pyridine OH terminated polymer than reacting the isolated P2VPOH polymer with n BuLi followed by addition of D3 in the presence of DMSO equimolar amount with nBuLi



High purity diblock copolymer formation

4. By Controlled radical process:



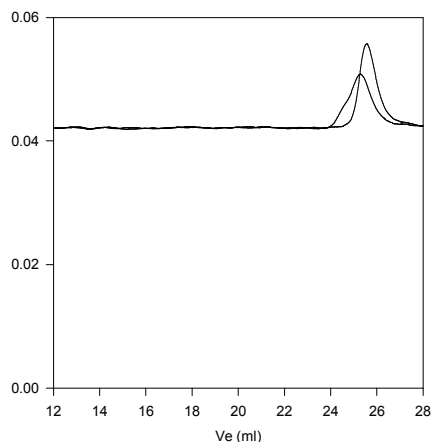
Characterization:

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.

Solubility:

Poly(2-vinyl pyridine-b-dimethyl siloxane) is soluble in THF, CHCl_3 and toluene

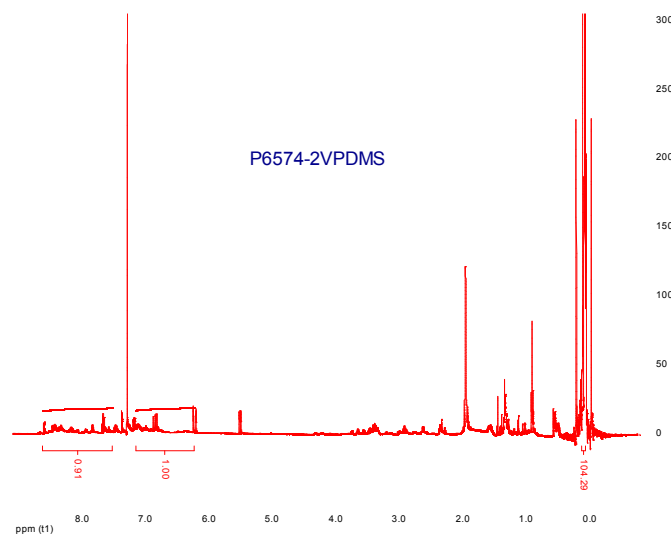
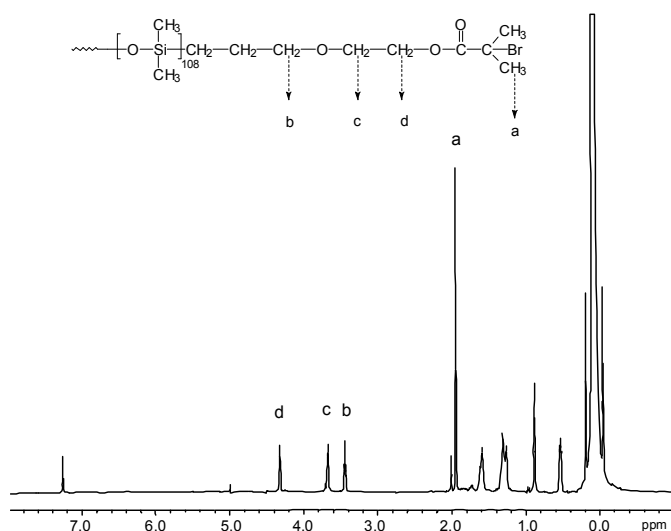
P6574-2VPDMS



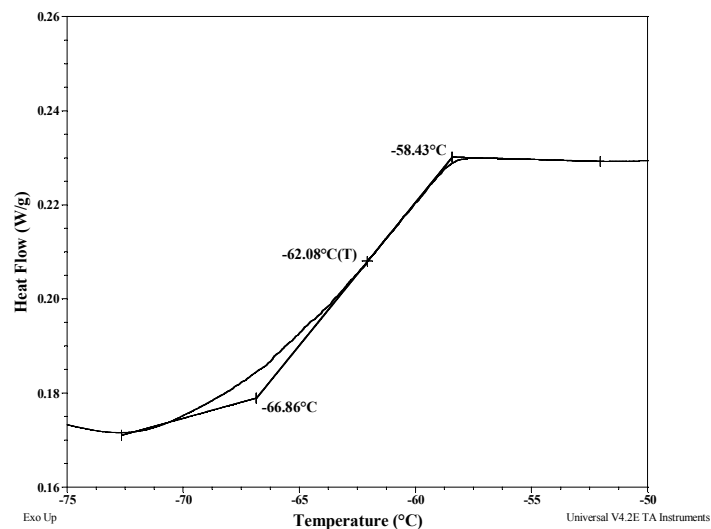
Size exclusion chromatography of

— Poly(dimethylsiloxane), $M_n=10000$ M_w : 10900 M_w/M_n 1.09
 — Block Copolymer P2VP(500)-b-PDMS(10000), $PI=1.15$
 Composition for $^1\text{H-NMR}$

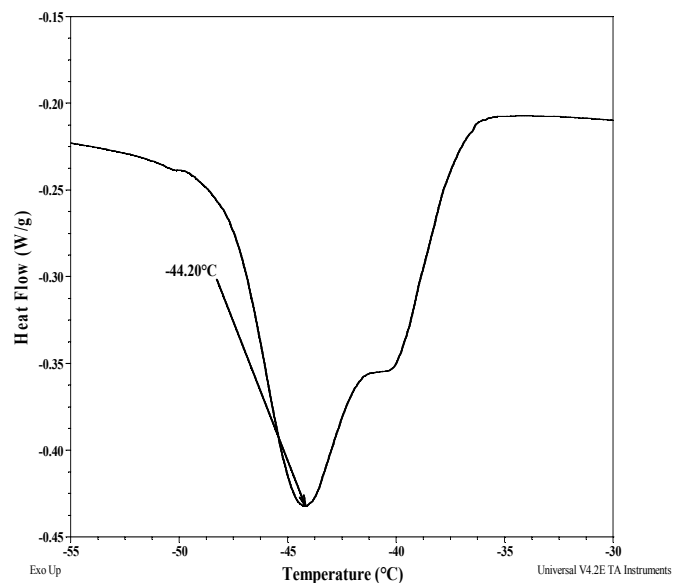
¹H NMR for the polymer:



Thermogram for DMS block:



Melting curve for DMS block:



Thermal analysis of the sample P6575-2VPDMS

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	-	-	90
DMS	-44	-	-62

Thermogram for 2VP block:

