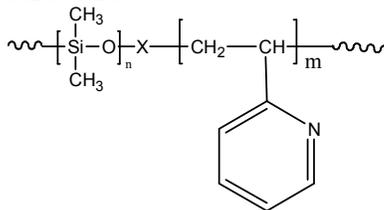


Sample Name: Poly(2-vinyl pyridine-b-dimethylsiloxane)

Sample #: P6574-2VPDMS

By controlled radical process

Structure:



Composition:

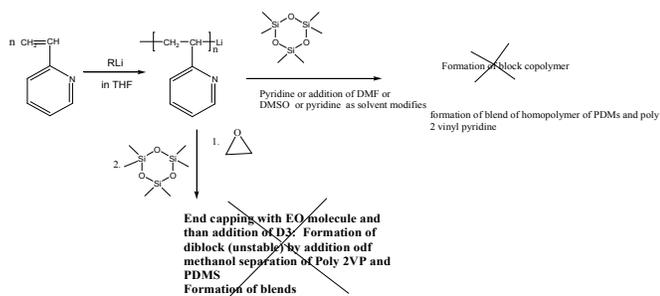
Mn × 10 ³ 2VP-b-DMS	Mw/Mn
0.5-b-10.0	1.15

Synthesis Procedure:

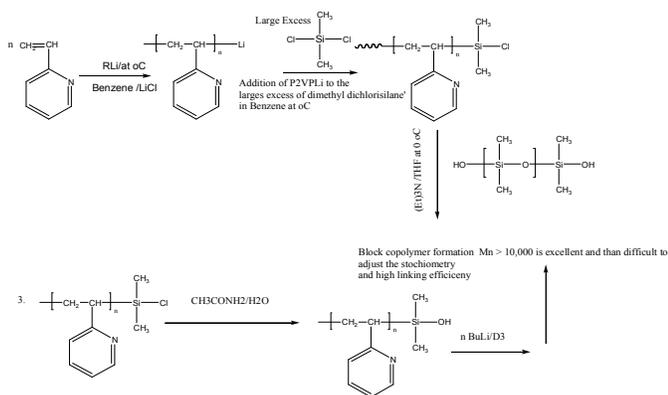
Poly(2-vinyl pyridine-b-dimethylsiloxane) is synthesized by one of the following routes.

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

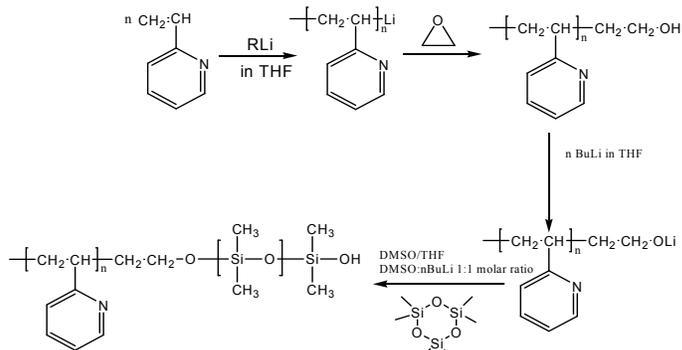
1. Direct Anionic Polymerization by sequential addition of 2VP followed by D3 monomer



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

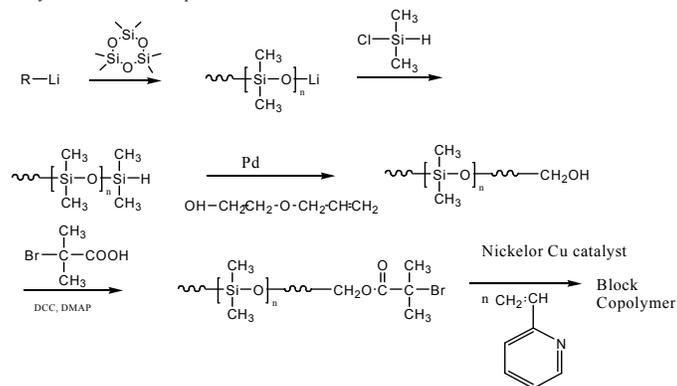


3. Formation of first Poly 2vinyl pyridine OH terminated polymer than reacting the isolated P2VPOH polymer with nBuLi followed by addition of D3 in the presence of DMSO equimolar amount with nBuLi



High purity diblock copolymer formation

4. By Controlled radical process:



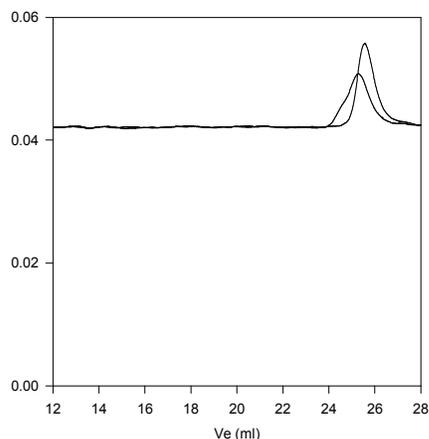
Characterization:

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 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.

Solubility:

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

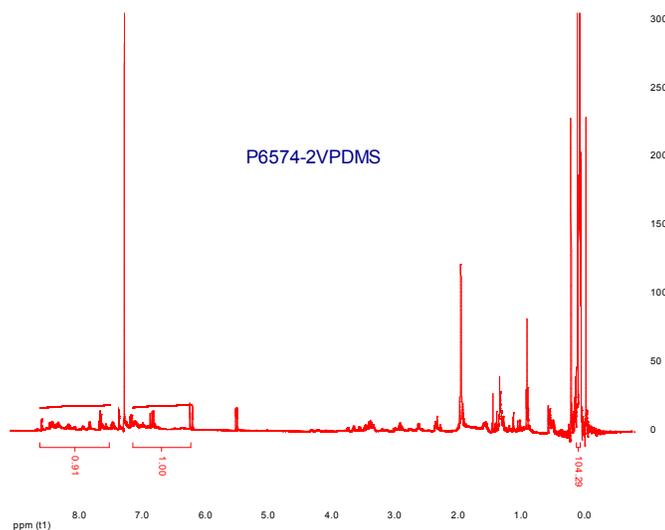
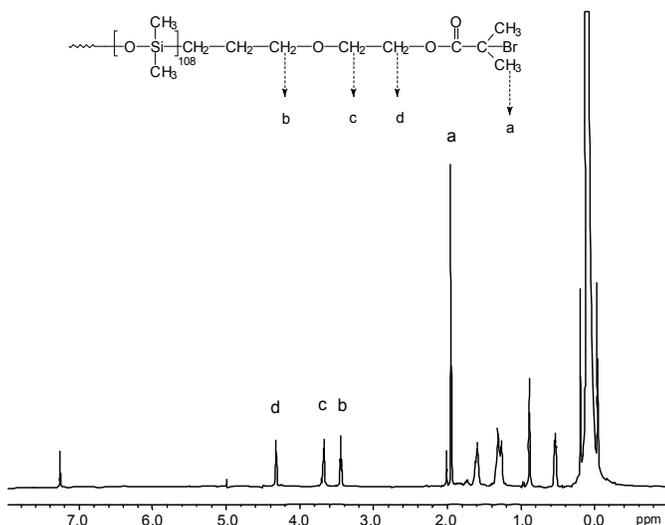
P6574-2VPDMS



Size exclusion chromatography of

— Poly(dimethylsiloxane), M_n=10000 Mw: 10900 Mw/Mn 1.09
 — Block Copolymer P2VP(500)-b-PDMS(10000), PI= 1.15
 Composition for ¹H NMR

¹H NMR for the polymer:



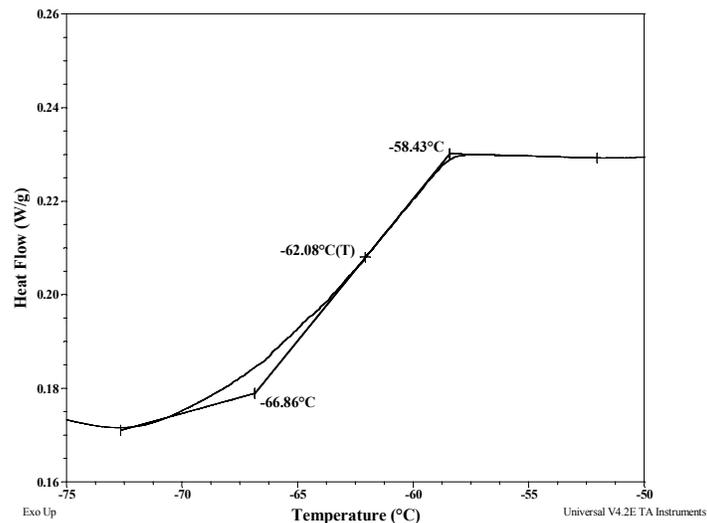
Thermal analysis of the sample P6575-2VPDMS

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.

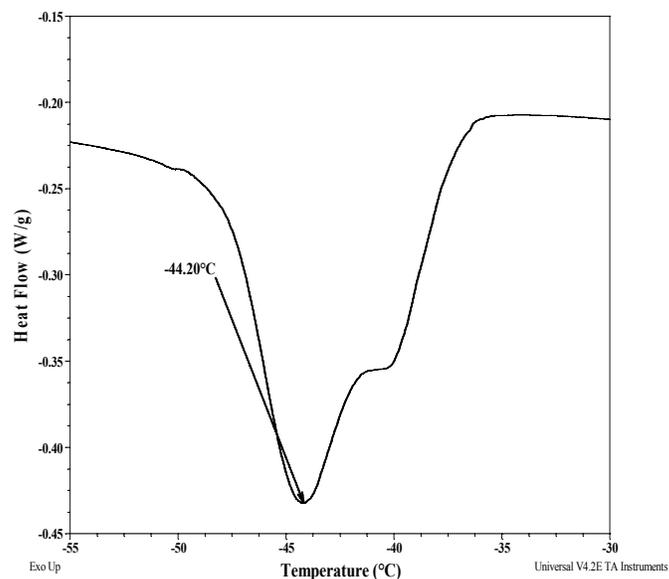
Thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
2VP	-	-	90
DMS	-44	-	-62

Thermogram for DMS block:



Melting curve for DMS block:



Thermogram for 2VP block:

