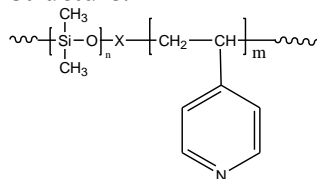


Sample Name: Poly (4-vinyl pyridine-b-dimethylsiloxane)

Sample #: P5328A-4VPDMS

By controlled radical process

Structure:



Composition:

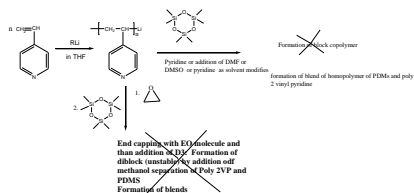
$M_n \times 10^3$ 4VP-b-DMS	Mw/Mn
1.0-b-10.0	1.2

Synthesis Procedure:

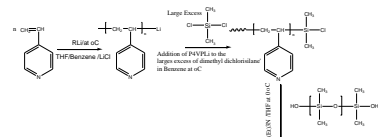
Poly(4-vinyl pyridine-b-dimethylsiloxane) is synthesized by one of the following routes.

Different routes for the synthesis of poly 4 vinyl pyridine with polydimethylsiloxane:

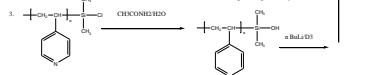
1. Direct Anionic Polymerization by sequential addition of 2VP followed by D3 monomer



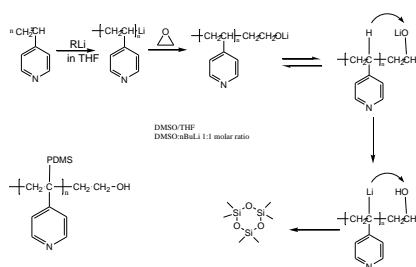
2. From the linking reaction of end functional polymer: For the synthesis of Block copolymer > Mn 10,000



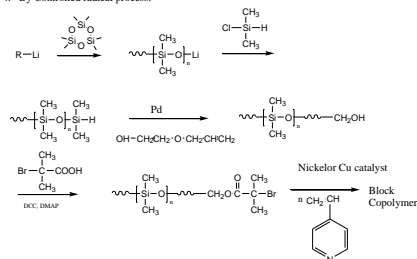
3. Block copolymer formation: Mn > 10,000 is excellent and thus difficult to adjust the stoichiometry and high linking efficiency



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:

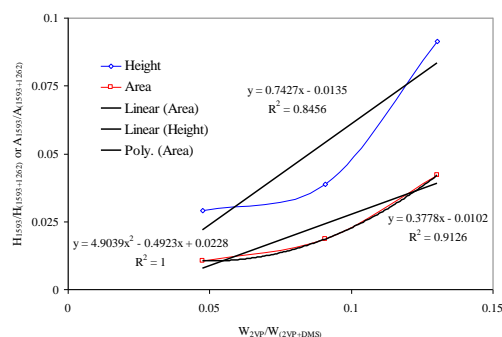


Characterization:

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 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.

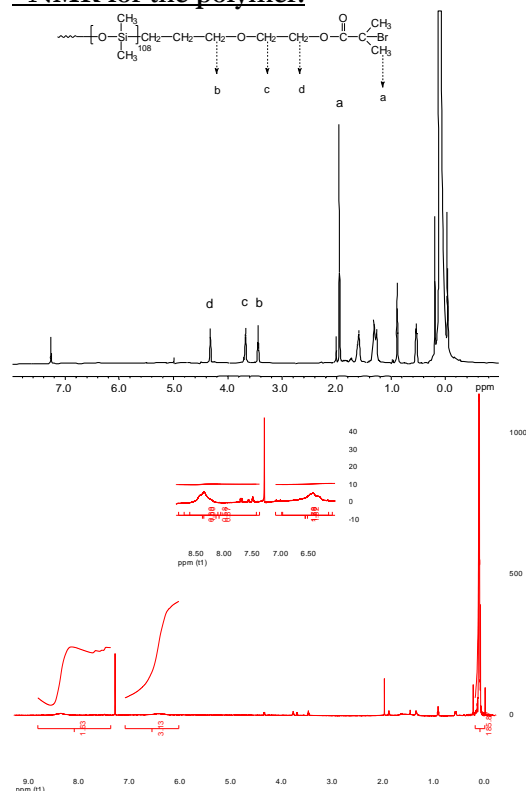
Relationship between weight fraction & FTIR peak area of 2VP in DMS



Solubility:

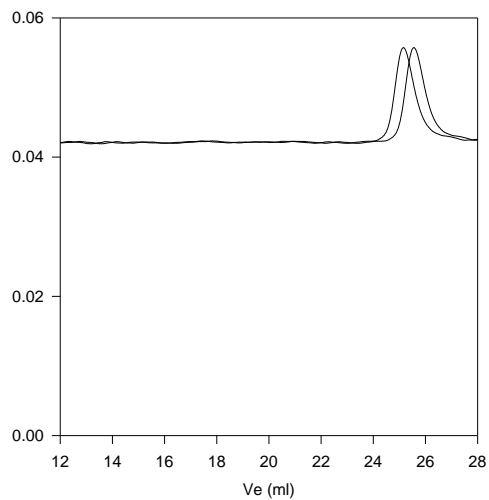
Poly(4-vinyl pyridine-b-dimethyl siloxane) is soluble in THF, CHCl₃ and toluene.

¹H NMR for the polymer:



SEC of the Polymer:

P5328A-4VPDMS



Size exclusion chromatography of

- Poly(dimethylsiloxane), $M_n=10000$ Mw: 10900 Mw/Mn 1.09
 - Block Copolymer P4VP(1000)-b-PDMS(10000), PI= 1.2
- Composition for ¹H NMR