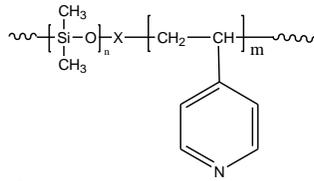


Sample Name: Poly (4-vinyl pyridine-b-dimethylsiloxane)

Sample #: P5328A-4VPDMS
By controlled radical process

Structure:



Composition:

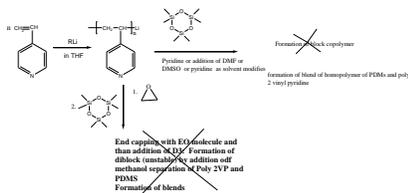
$M_n \times 10^3$ 4VP-b-DMS	Mw/Mn
1.0-b-10.0	1.2

Synthesis Procedure:

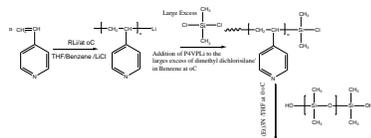
Poly(4-vinyl pyridine-b-dimethylsiloxane) is synthesized by one of the following routes.

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

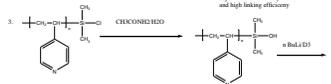
1. Direct Anionic Polymerization by sequential addition of 2VP followed by D3 monomer



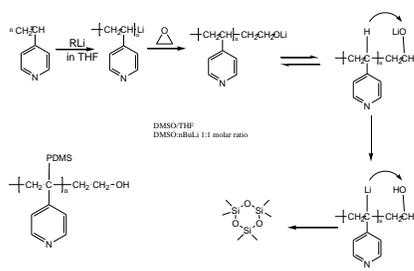
2. From the linking reaction of end functionalized polymer: For the synthesis of Block copolymer - Mn 10,000



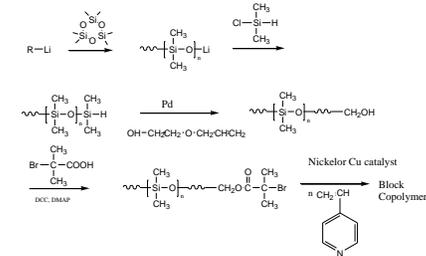
3. Block copolymer formation: Mn > 10,000 is excellent and thus difficult to adjust the stoichiometry and high linking efficiency



3. Formation of first Poly 4-vinyl 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:

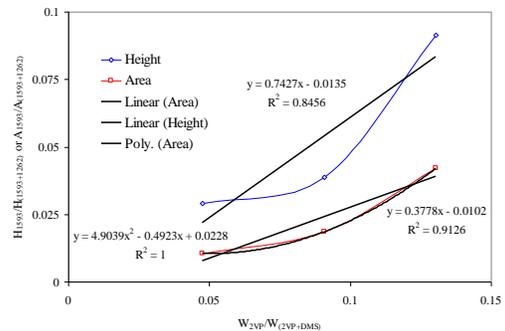


Characterization:

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.

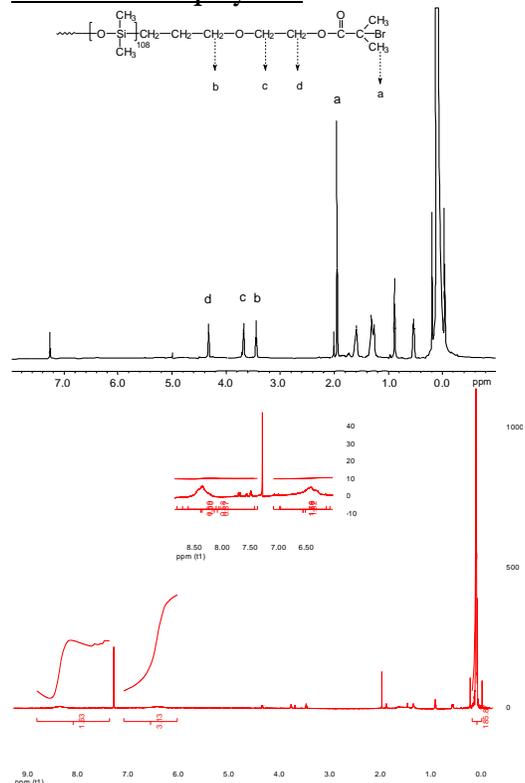
Relationship between weight fraction & FTIR peak area of 2VP in DMS



Solubility:

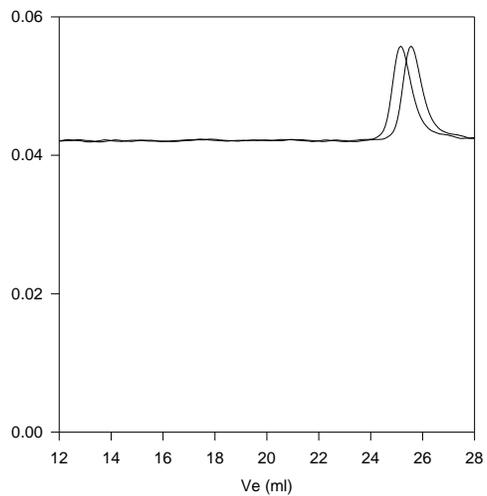
Poly(4-vinyl pyridine-b-dimethyl siloxane) is soluble in THF, CHCl₃ and toluene.

¹H NMR for the polymer:



SEC of the Polymer:

P5328A-4VPDMS



Size exclusion chromatography of

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