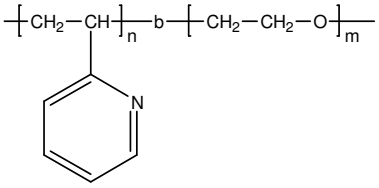
Sample Name:
Poly(2-vinyl pyridine –*b*– ethylene oxide)

Sample # 19517-2VPEO

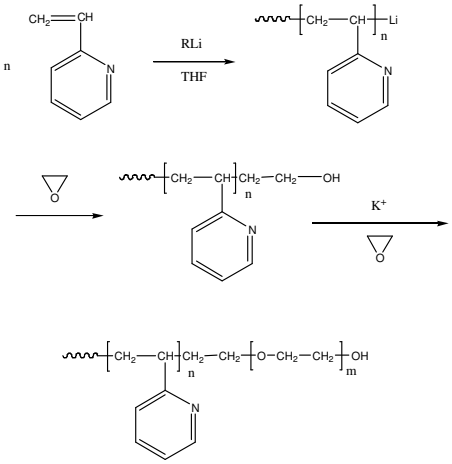
Structure:



Composition:

Mn x 10^3 P2VP-b-PEO	Mw/Mn
3.5–*b*–7.0	1.11

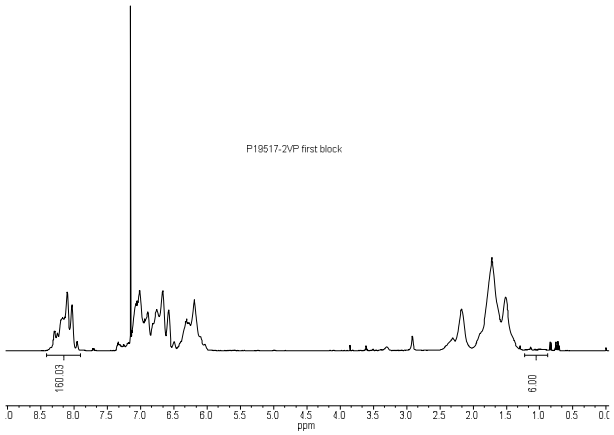
Synthesis procedure:
Poly(2-vinyl pyridine –*b*– ethylene oxide) is prepared by living anionic polymerization of ethylene oxide using potassium salt of hydroxyl terminated poly(2-vinyl pyridine) as a macro-initiator. The reaction scheme is shown below:



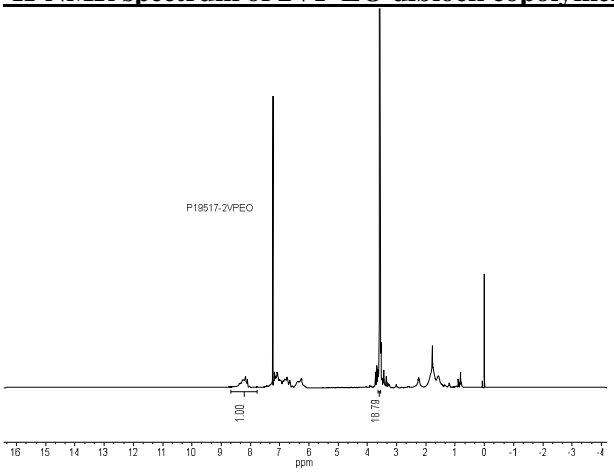
Characterization:
An aliquot of the hydroxyl terminated poly(2-vinyl pyridine) was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the 2-vinyl pyridine proton at about 8.2 ppm with the peak area of the ethylene oxide protons at about 3.6 ppm. Block copolymer PDI is determined by SEC.

Solubility:
Poly(2-vinyl pyridine -b- ethylene oxide) is soluble in THF, chloroform, ethanol, DMF. It precipitates from hexanes.

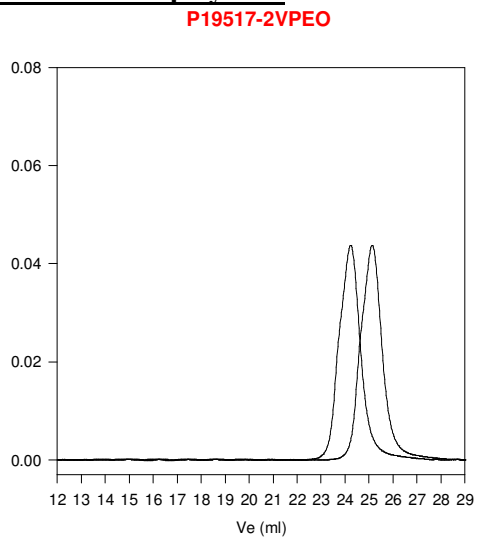
^{1}H-NMR spectrum of P2VP (first block):



^{1}H-NMR spectrum of 2VP-EO diblock copolymer:



SEC of the block copolymer:



Size exclusion chromatography of poly(2-vinylpyridine)-b-poly(ethylene oxide):
—— Poly(2-vinylpyridine), M_n=3,500, M_w=4,000, PI=1.17
—— Block Copolymer P2VP(3,500)-b-PEO(7,000), PI=1.11
(Composition from ^{H} NMR)