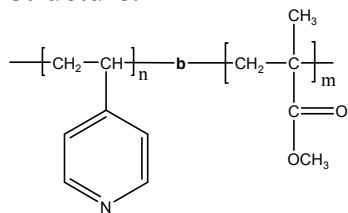


Sample Name: Poly(4-vinyl pyridine-b-methyl methacrylate)

Sample #: P2249-4VPMMA

Structure:



Composition:

Mn x 10 ³ 4VP-b-MMA	Mw/Mn (PDI)
1.6-b-148.9	1.12

Synthesis Procedure:

Poly(4-vinyl pyridine-b-methyl methacrylate) is synthesized by living anionic polymerization with sequence addition of 4-vinyl pyridine followed by methyl methacrylate.

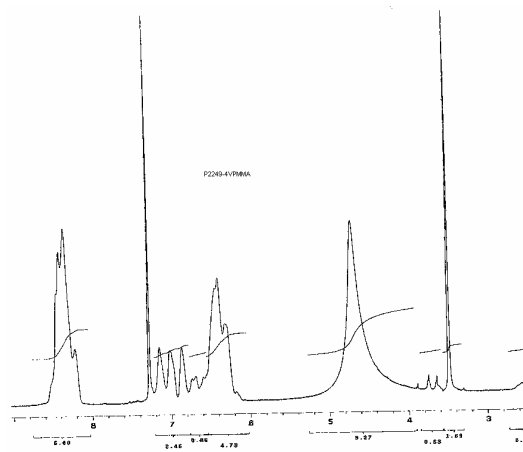
Characterization:

An aliquot of the anionic 4-vinyl pyridine block was terminated before addition of methyl methacrylate and 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 4-vinyl pyridine proton peaks at about 8.5 ppm with the methyl methacrylate protons at 3.6 ppm. Copolymer PDI is determined by SEC.

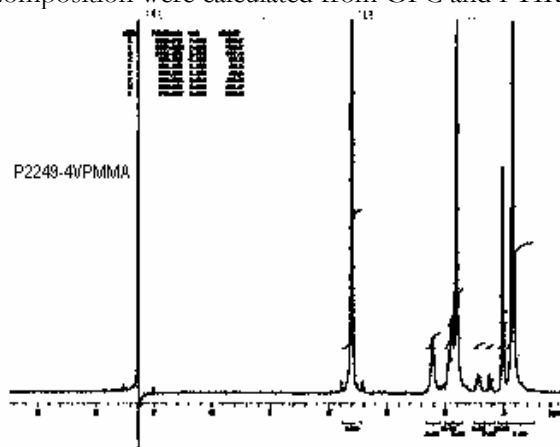
Solubility:

Poly(4-vinyl pyridine-b-methyl methacrylate) is soluble in THF, CHCl₃ and dioxane.

¹H-NMR Spectrum of the 4VP polymer before adding MMA monomer:



HNMR of the Diblock copolymer: Due to small % of 4VP fraction that could not be detected from HNMR; Composition were calculated from GPC and FTIR;



Reference:

S. K. Varshney, X. F. Zhong and A. Eisenberg, Anionic homopolymerization and block copolymerization of 4-vinylpyridine and its investigation by high-temperature size-exclusion chromatography in N-Methyl-2-Pyrrolidinone. CA 118, 12, 102658, *Macromolecules*, 1993, 26, 701-706.

Thermal analysis for the sample P2249-4VPMMA

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).

Thermal analysis results at a glance

Sample	T_g (°C)
4VP ($M_n=15k$)	135
MMA ($M_n=450k$)	118
P-2249	132

Thermogram for the sample:

