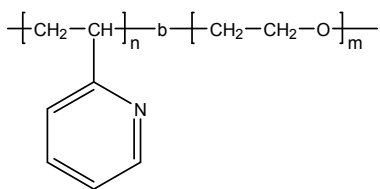


Sample Name: Poly(2-vinyl pyridine -b- ethylene oxide)

Sample #: P1193-2VPEO

Structure:

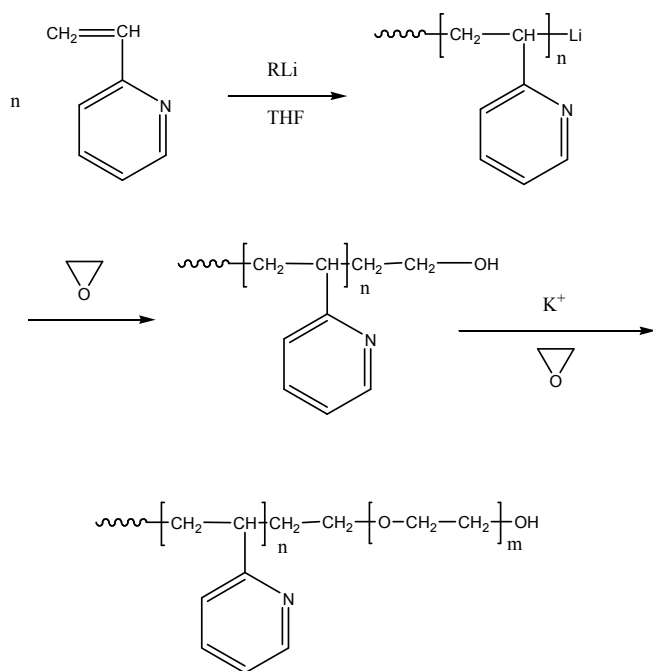


Composition:

Mn x 10 <sup>3</sup> P2VP-b-PEO	PDI
26.4-b-5.9	1.08

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:



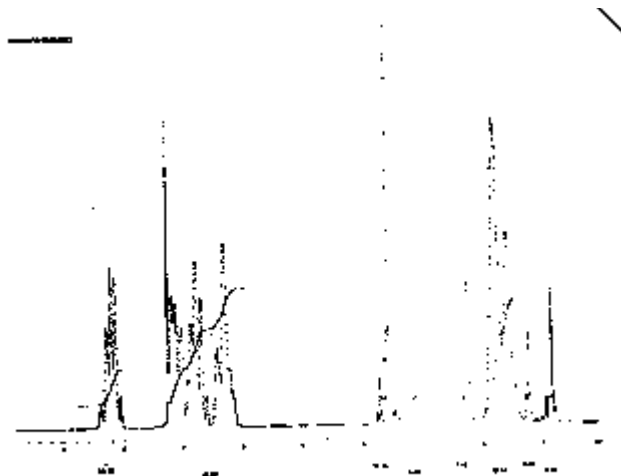
Characterization:

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 <sup>1</sup>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:

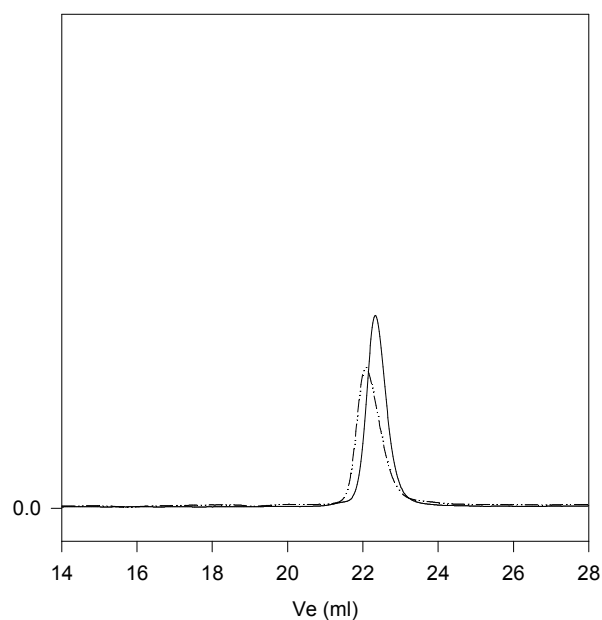
Poly(2-vinyl pyridine -b- ethylene oxide) is soluble in ethanol, DMF, chloroform, and THF. Hexanes are its non-solvent.

<sup>1</sup>H-NMR Spectrum of the block copolymer:



SEC of the block copolymer:

**P1193-2VPEO**

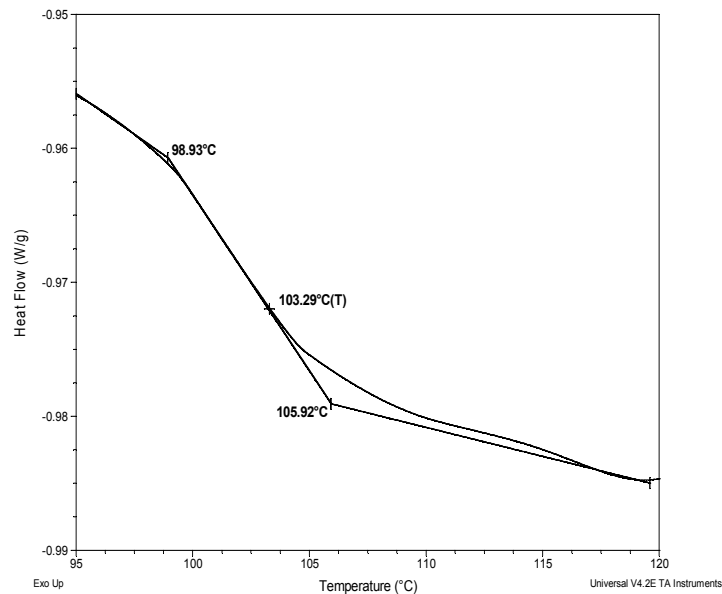


— OH terminated poly(2-vinylpyridine), M<sub>n</sub>=26400, M<sub>w</sub>=5000, PI=1.16  
- - - Block Copolymer P2VP(26400)-b-PEO(5900), PI=1.08

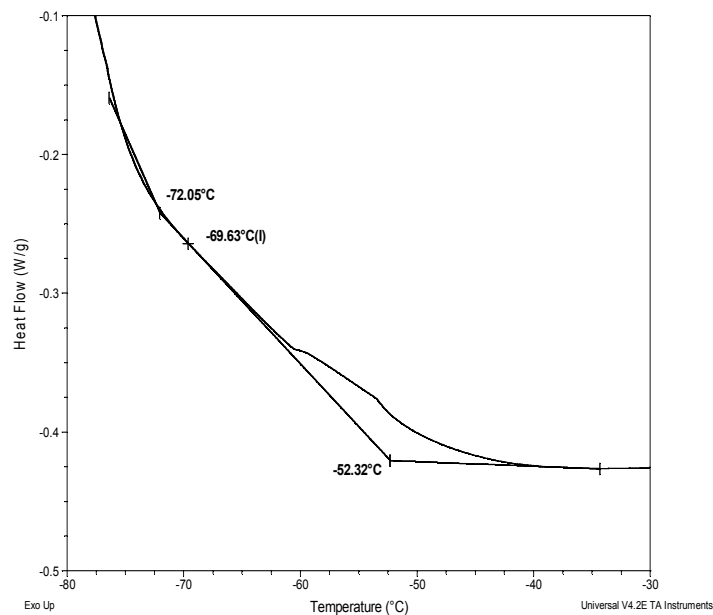
Thermal analysis of the sample# P1193-2VPEO

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°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 ( $T_g$ ).

Thermogram for 2VP block:



Thermogram for PEO block:



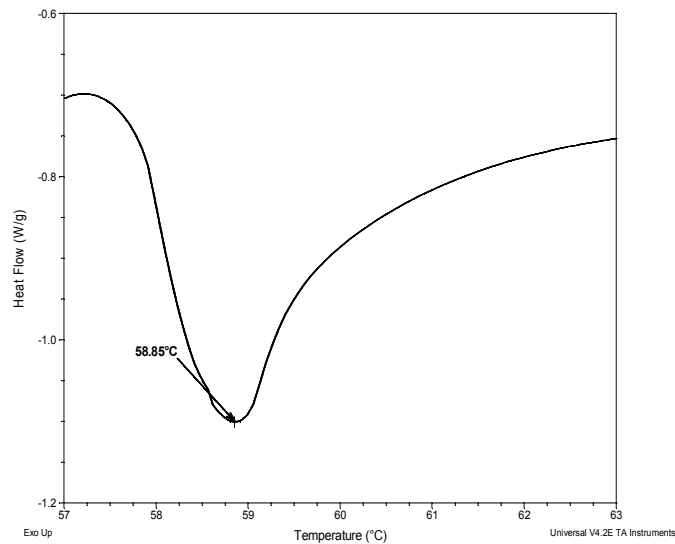
Thermal analysis results at a glance

For 2VP block		
$T_g$ : 103°C	$T_m$ : -	$T_c$ : -
For PEO block		
$T_g$ : -76°C	$T_m$ : 59°C	$T_c$ : 36°C

Melting and crystallization curve for the sample

The melting temperature ( $T_m$ ) was taken as the maximum of the endothermic peak where as the crystallization temperature ( $T_c$ ) was considered as the minimum of the exothermic peak.

Melting curve for PEO block:



Crystallization curve For PEO block

