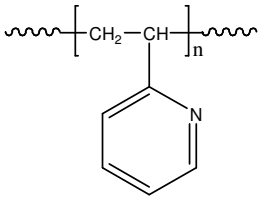
Sample Name: **Poly(2-vinyl pyridine)**

Sample #: **P9389F-2VP**

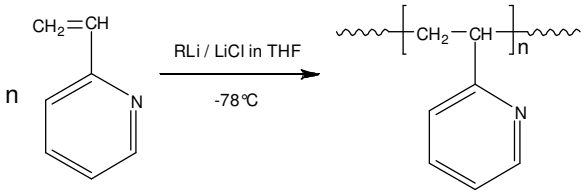
Structure:



Composition:

Mn x 10^3	PDI
5.0	1.6

Synthesis Procedure:
Poly(2-vinyl pyridine) is obtained by living anionic polymerization of 2-vinyl pyridine using an adduct of Sec. butyllithium and diphenyl ethylene-LiCl. Polymerization is carried out in THF at –78 oC. Polymerization reaction is terminated using degassed methanol. The reaction scheme is illustrated as follows:

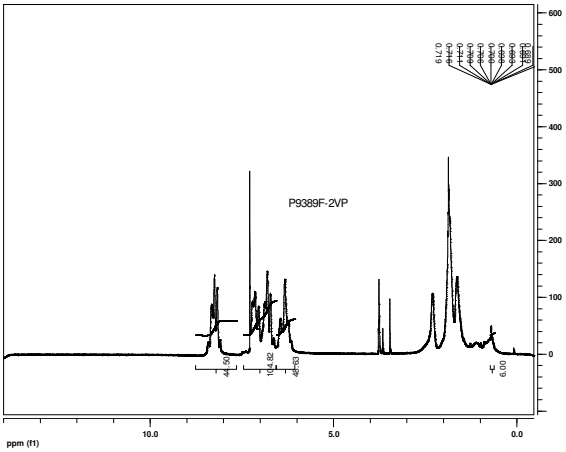


Characterization:
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co.

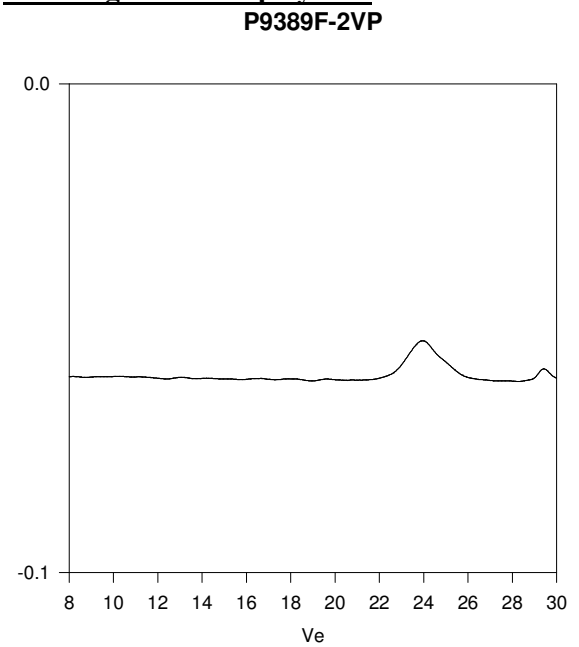
Thermal analysis was performed on TA Instruments Q100 differential scanning calorimeter (DSC) under a nitrogen atmosphere. The glass transition temperature (Tg) of the polymer was measured at a scan rate of 10°C/min shortly after creating thermal history of the sample.

Solubility:
Poly 2 vinylpyridine is soluble in DMF, THF, toluene, methanol, ethanol and $CHCl_3$. It precipitates from water and hexanes, ether.

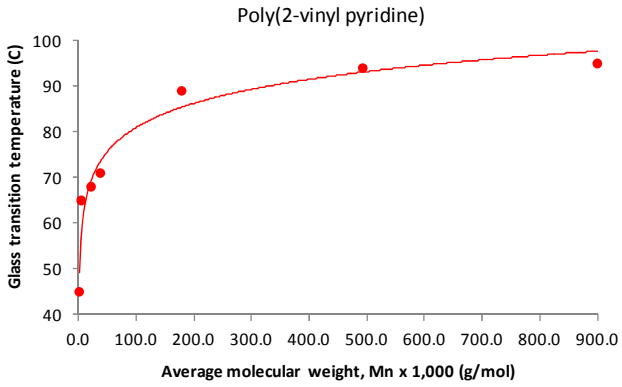
^{1}H NMR spectrum of the polymer:



SEC elugram of the polymer:



Size exclusion chromatography of poly(2-vinylpyridine) in THF

M_n=5,000, M_w=8,000, PI=1.6

Relationship between Tg and Mn of P2VP: