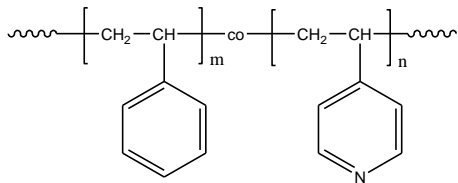


Sample Name:

Random Copolymer Poly(styrene-co-4-vinylpyridine)

Sample #: P6423-S4VPran

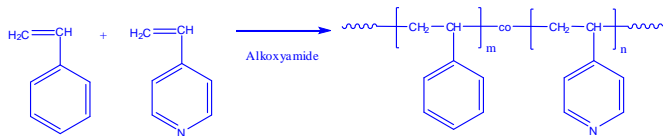
Structure:**Composition:**

P4VP (mol%) : 90.2

Mn x 10 ³ PS-co-P4VP	PDI
76.8	2.06
Tg for the random polymer	126°C

Synthesis Procedure:

The polymer is prepared by nitroxide mediated radical polymerization of styrene and 4-vinylpyridine. The scheme of the reaction is illustrated below:

**Characterization:**

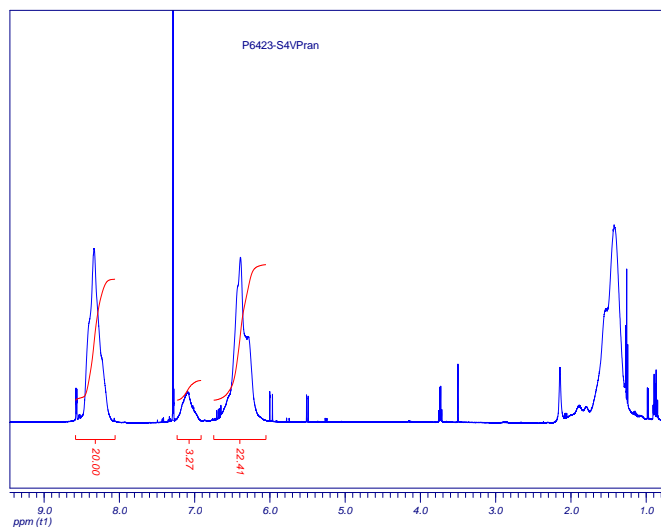
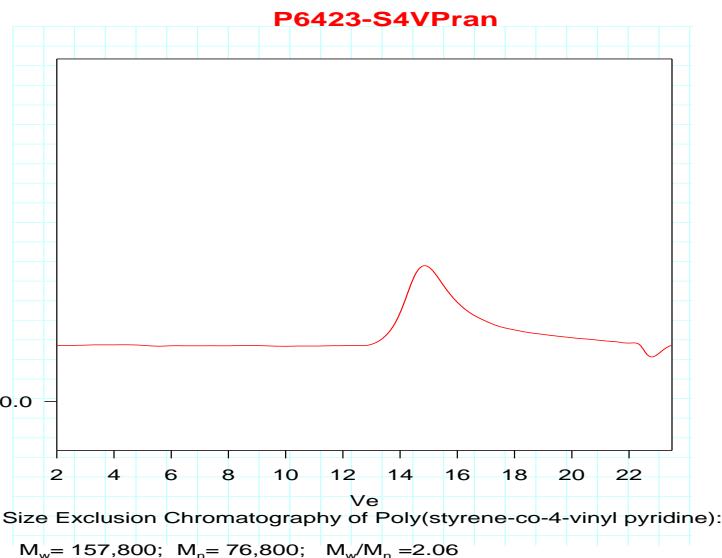
The polymer was analyzed by size exclusion chromatography (SEC) in DMF to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of 4VP protons at 8.28 ppm with the styrene protons at about 6.1-7.2 ppm that deducts the contribution of the 4VP protons.

Thermal analysis:

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).

Solubility:

The copolymer is soluble in CHCl₃, DMF, and precipitated out from hexane, ether even THF in this composition (10% of styrene).

¹H-NMR Spectrum of the random copolymer:**SEC of the random copolymer:****DSC thermogram for the sample:**