Sample Name:
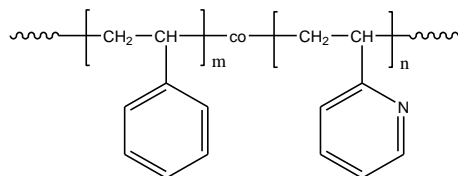**Random Copolymer Poly(styrene-co-2-vinypyridine)**
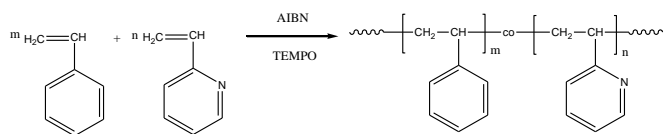
Sample #: P7613-S2VPran

Structure:

Composition:
2VP (mol%) : 30.0

Mn x 10³ PS-co-P2VP	PDI
40.5	1.38
T_g for the random copolymer	**92°C**

Synthesis Procedure:

The polymer is prepared by radical polymerization of styrene and 2-vinylpyridine in the presence of TEMPO and AIBN. The scheme of the reaction is illustrated below:
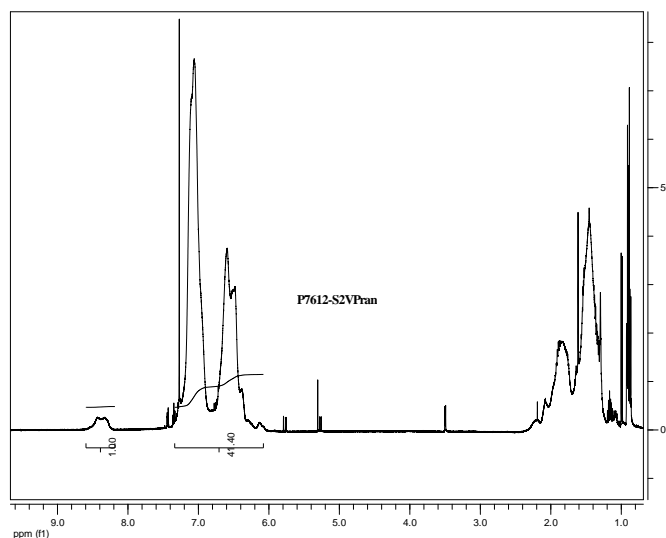

Characterization:

The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of 2VP protons at 8.3 ppm with the styrene protons at about 6.1-7.2 ppm that deducts the contribution of the 2VP protons.
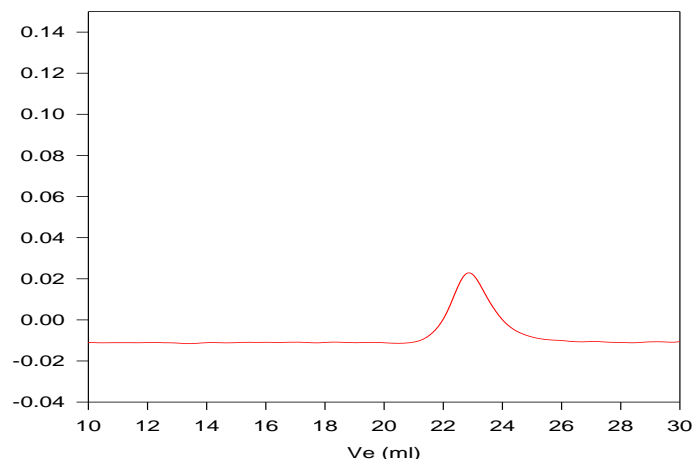
Thermal analysis:

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 polymer is soluble in CHCl₃, THF, DMF, toluene and precipitated out from hexane

¹H-NMR Spectrum of the random copolymer:

SEC of the random copolymer:

P7613-S2VPran

Size exclusion chromatograph of the polymer:
M_n=40500, M_w=55800, M_w/M_n=1.38
2VP= 30.0 mole% from NMR

Thermogram for the sample: