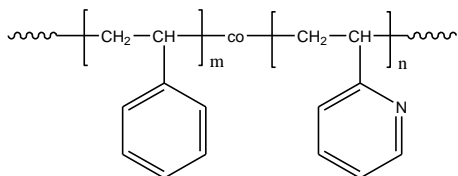


Sample Name:

Random Copolymer Poly(styrene-co-2-vinylpyridine)

Sample #: P7611-S2VPran

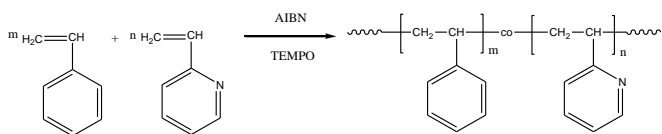
Structure:**Composition:**

2VP (mol%) : 44.0

$M_n \times 10^3$ PS-co-P2VP	PDI
36.5	1.30
T_g for the random copolymer	90°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:**

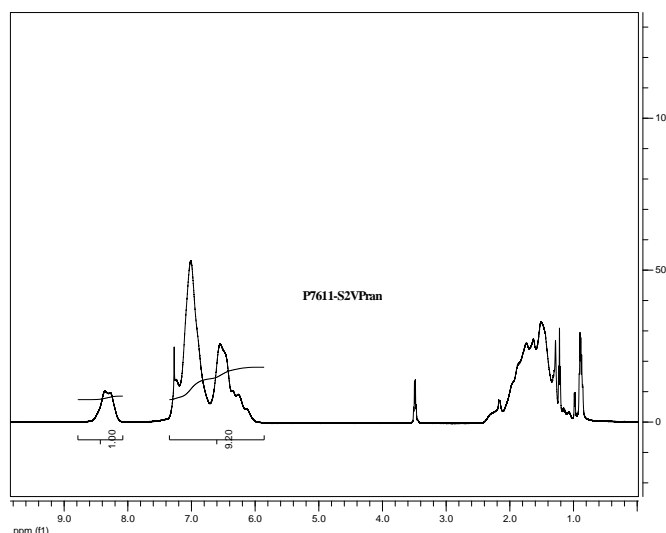
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from $^1\text{H-NMR}$ spectroscopy by comparing the peak area of 2VP protons at 8.3 ppm with the styrene protons at about 6.1-7.2 ppm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

Thermal analysis:

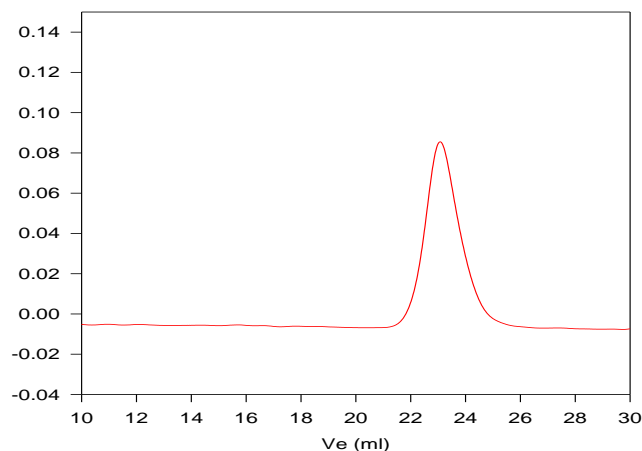
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of $10^\circ\text{C}/\text{min}$. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

The polymer is soluble in CHCl_3 , THF, DMF, toluene and precipitated out from hexane

 $^1\text{H-NMR}$ Spectrum of the random copolymer:**SEC of the random copolymer:**

P7611-S2VPran



Size exclusion chromatograph of the polymer:

$M_n=36500$, $M_w=47500$, $M_w/M_n=1.30$
2VP= 44.0 mole% from NMR

DSC thermogram for the sample: