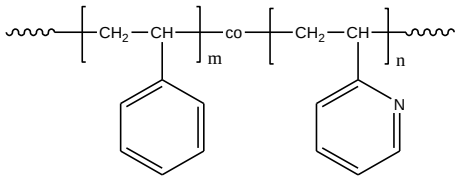
Sample Name:
Random Copolymer Poly(styrene-co-2-vinypyridine)

Sample #: P7310-S2VPran

Structure:

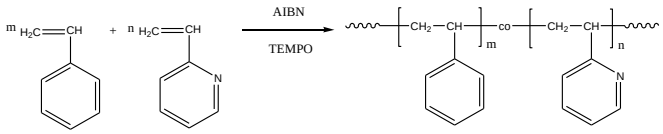


Composition:
P2VP (mol%) : 55

Mn x 10^3 PS-co-P2VP	PDI
58	1.7
T_g for the random copolymer	**97°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:

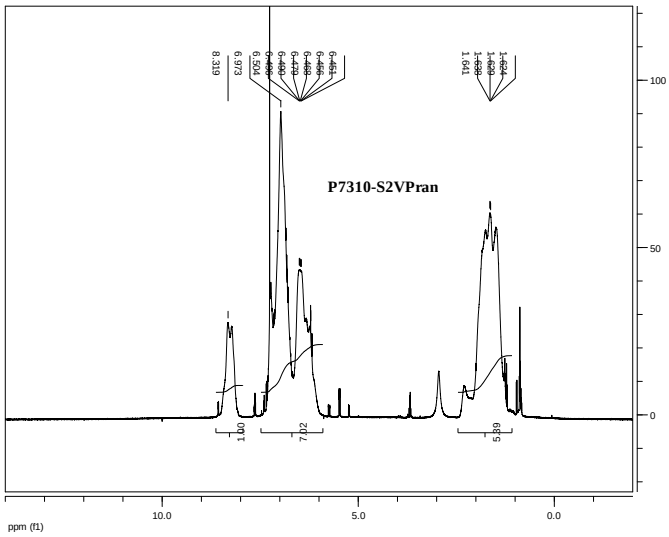


Characterization:
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of 2VP protons at 8.3 ppm with the styrene protons at about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

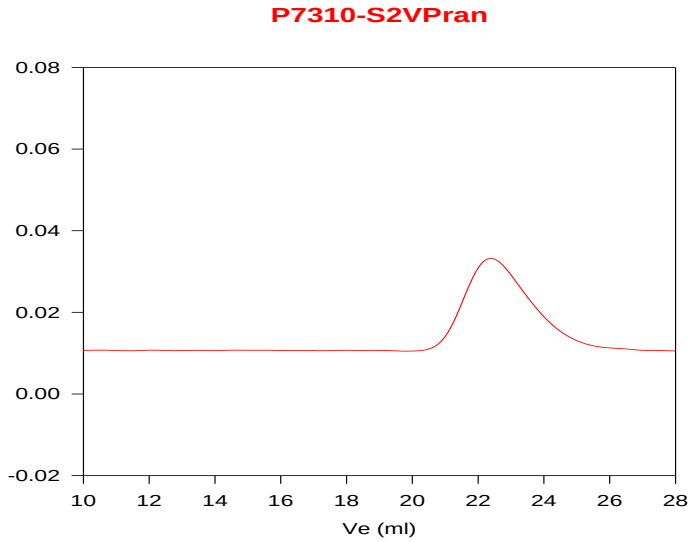
Thermal analysis:
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

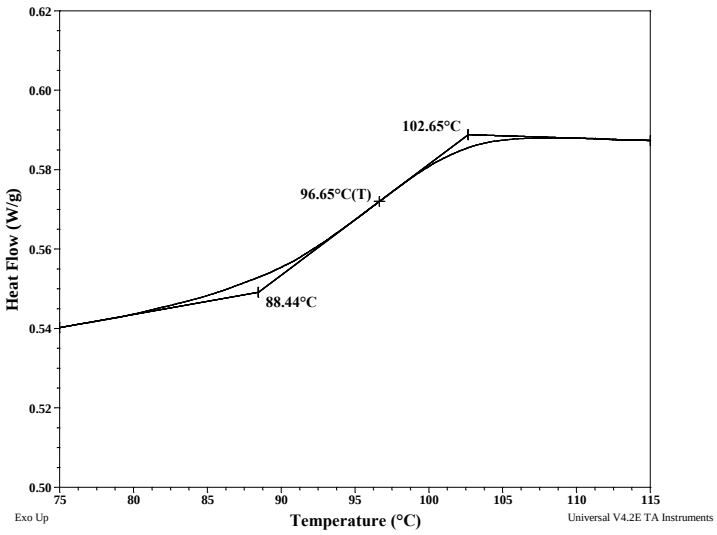
Solubility:
The polymer is soluble in $CHCl_3$, THF, DMF, toluene and precipitated out from hexane

^{1}H-NMR Spectrum of the random copolymer:



SEC of the random copolymer:



Size exclusion chromatograph of the polymer:
M_n=58000, M_w=99000, M_w/M_n=1.7 (PS standard)
2VP=55%mol

DSC thermogram for the sample: