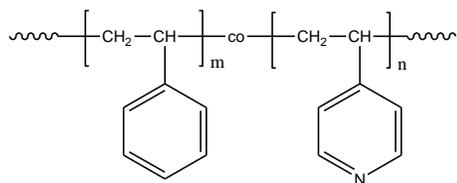


Sample Name:

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

Sample #: P7304-S4VPran

Structure:



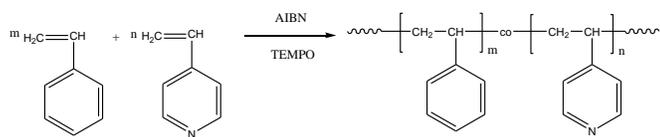
Composition:

P4VP (mol%) : 50

$M_n \times 10^3$ PS-co-P4VP	PDI
123.4	1.6
T_g for random polymer	130°C

Synthesis Procedure:

The polymer is prepared by radical polymerization of styrene and 4-vinylpyridine in the presence of TEMPO. 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 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.

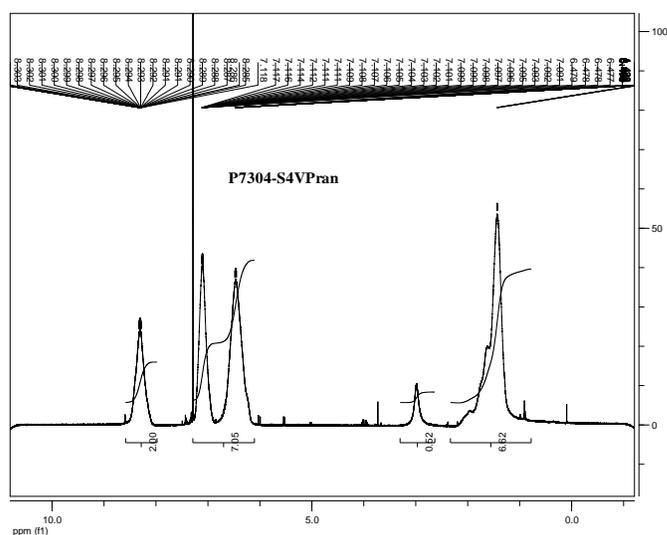
Thermal analysis:

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:

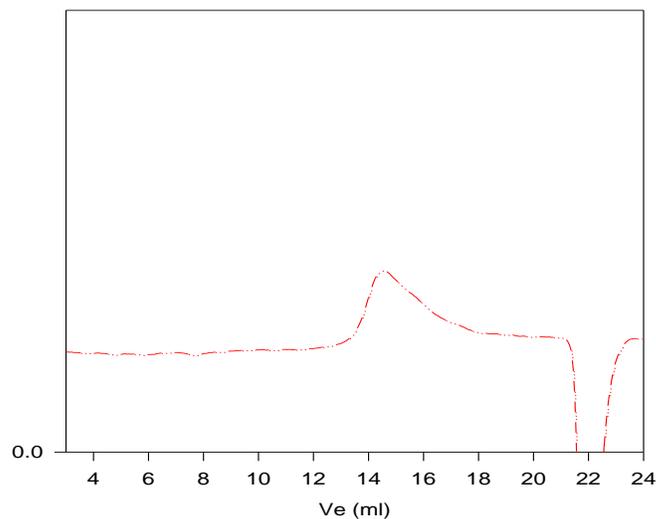
The polymer is soluble in CHCl_3 , THF, DMF, toluene and precipitated out from hexane

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



SEC of the random copolymer:

P7304-S4VPran



$M_n=123400$, $M_w=197400$, $PI=1.6$ (SEC polystyrene standard)
4VP%mol= 50% from NMR

DSC thermogram for the sample:

