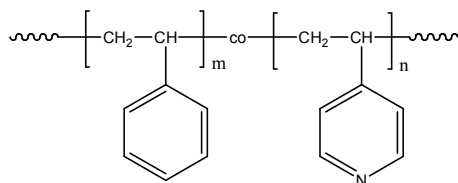


Sample Name:

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

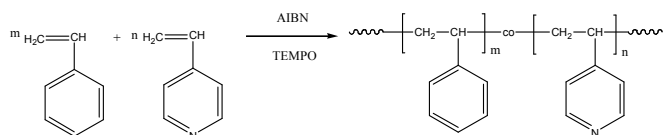
Sample #: P4332-S4VPran**Structure:****Composition:**

P4VP (mol%) : 22

Mn x 10 ³ PS-co-P4VP	PDI
46	2.2
T _g for the random polymer	99°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:**

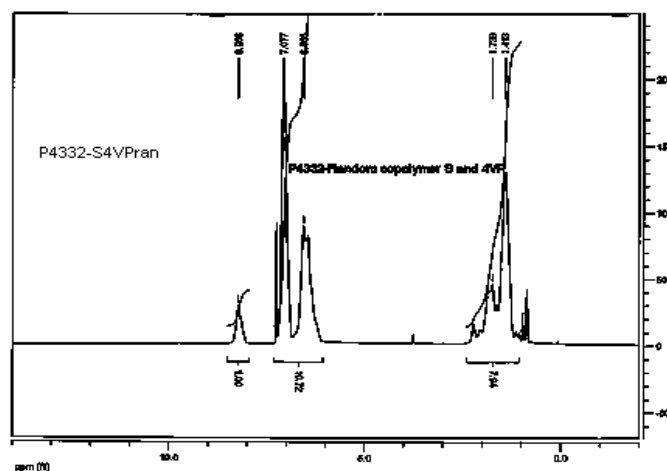
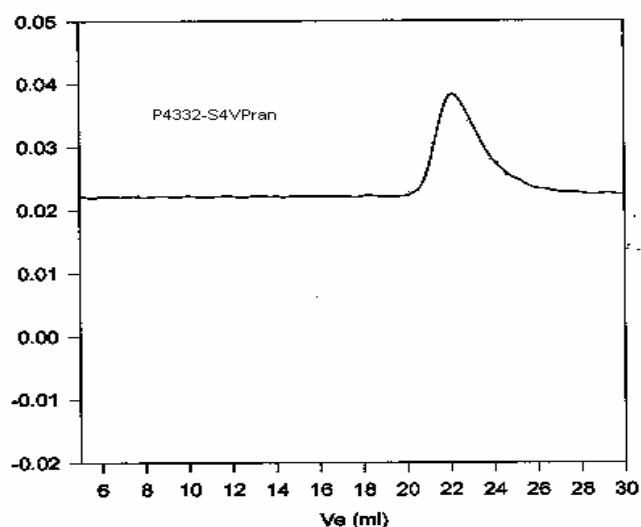
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of 4VP protons at 8.28 ppm with the styrene protons at about 6.1-7.2 ppm that deducts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

Size exclusion chromatograph of random copolymer poly(S-co-4VP):

M_n=46,000, M_w=101,000, M_w/M_n=2.2
4VP: 22 mole%

Thermogram for the random polymer