Sample Name:
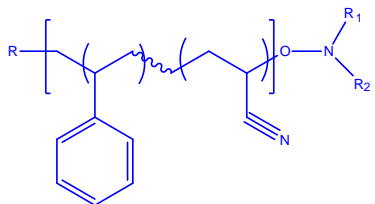### Random Copolymer Poly(styrene-co-acrylonitrile)

Sample #: P6430-SANran

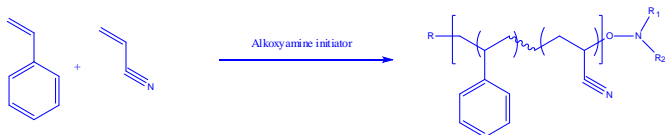## Structure:

Composition:

Mn x 10^3 (Styrene wt%)	PDI
30.4 (79%)	1.19
T_g for the random copolymer	104°C

Synthesis Procedure:

Random Copolymer is prepared by nitroxide-mediated radical polymerization of styrene, and acrylonitrile.

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 the aromatic protons at 6.66-7.05 ppm with the protons of acrylonitrile at about 1.5-2.5 ppm that deducts the contribution of the styrene back bone protons.

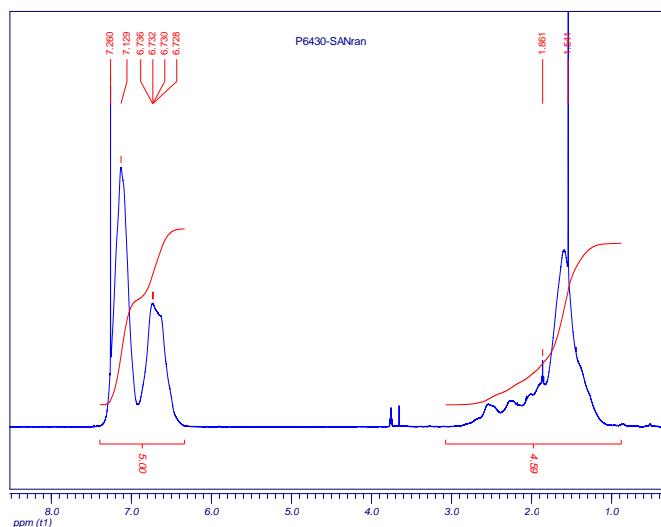## Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°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).
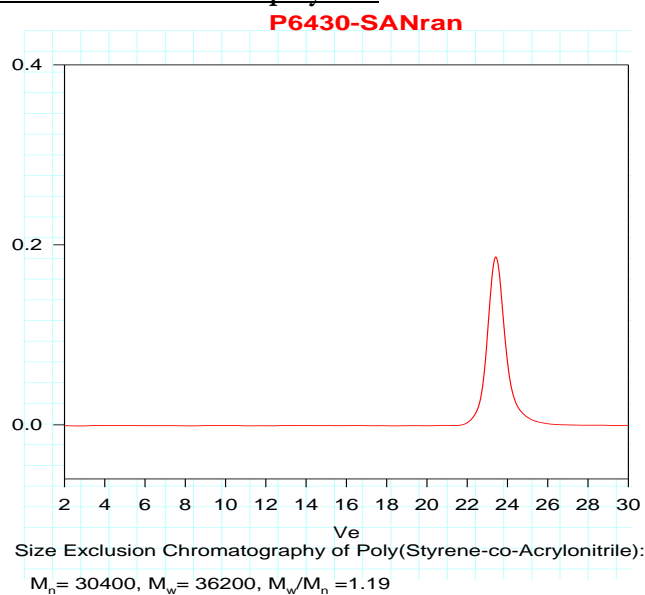
Solubility:

Random Copolymer Poly(styrene-co-acrylonitrile) is soluble in $CHCl_3$, THF, DMF at this composition and precipitated out from methanol.

Proton NMR of copolymer:

SEC of the random copolymer:

Size Exclusion Chromatography of Poly(Styrene-co-Acrylonitrile):

M_n= 30400, M_w= 36200, M_w/M_n =1.19

DSC thermogram for the sample: