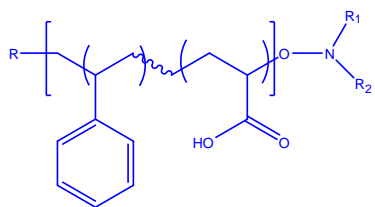


Sample Name:

Random Copolymer Poly(styrene-co-acrylic acid)

Sample #: P6431-SAAran

Structure:**Composition:**

Mn x 10 ³ (Styrene wt%)	PDI
15.8 (91%)	1.16
T _g for the random copolymer	111°C

Synthesis Procedure:

Random Copolymer is prepared by nitroxide-mediated radical polymerization of styrene, and tert-butylacrylate, following hydrolysis in dioxane

Characterization:

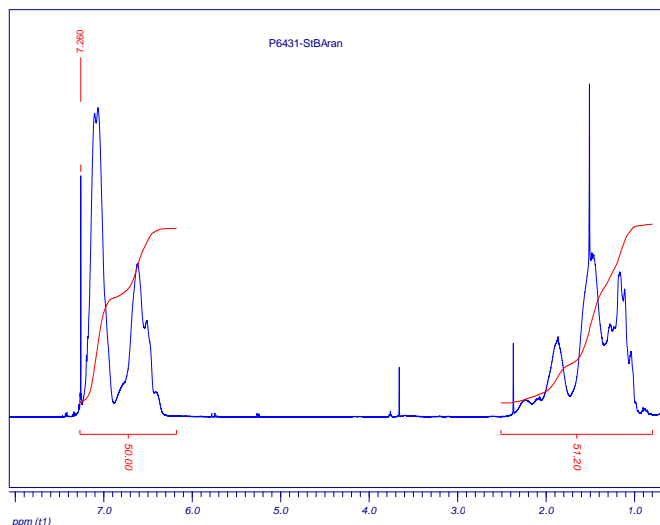
The polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area the aromatic protons of 6.66-7.05 ppm with the protons of acrylate at about 1.5-2.5 ppm that deducts the contribution of the styrene backbone protons.

Thermal analysis:

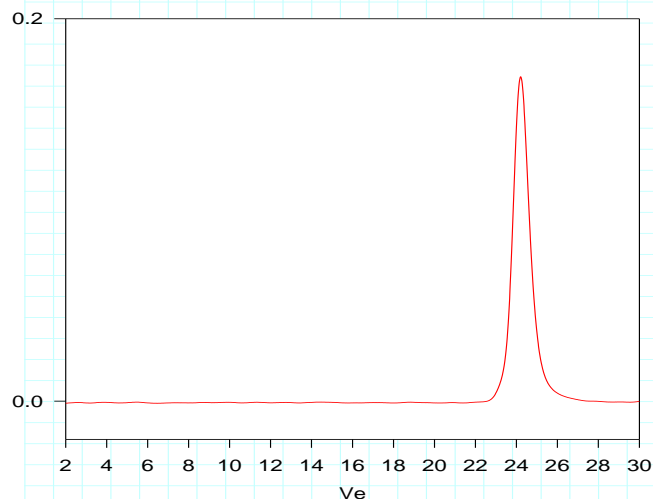
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

Random Copolymer Poly(styrene-co-acrylic acid) is soluble in CHCl₃, THF, DMF at this composition and precipitated out from hexanes.

Proton NMR of copolymer (precursor with t-butyl ester):**SEC of the random copolymer:**

P6431-StBAran
(precursor of P6431-SAAran)



Size Exclusion Chromatography of Poly(Styrene-co-t-Butylacrylate):

M_n = 16900, M_w = 19600, M_w/M_n = 1.16

After hydrolysis: M_n = 15800, M_w/M_n = 1.16 (Styrene wt % = 91%, mol % = 85%)

DSC thermogram for the sample: