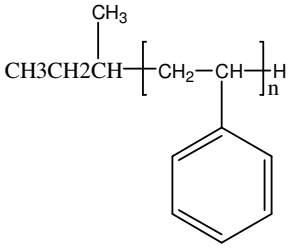
Sample Name: **Polystyrene**

Sample #: **P4689-S**

Structure:



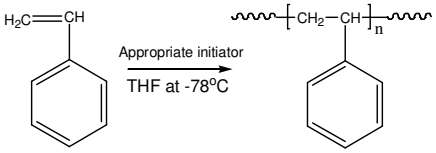
Composition:

$M_n \times 10^3$ (g/mol)	M_w/M_n
0.75	1.12

Glass transition temperature:	T_g = 7°C

Synthesis procedure:

Polystyrene was obtained by living anionic polymerization of styrene. The scheme of reaction is shown below:



Characterization:

The molecular structure and purity of the polymer were confirmed by proton NMR analysis. The molecular weight and polydispersity index (M_w/M_n) were obtained by size exclusion chromatography (SEC) using THF as an eluent. SEC analysis was performed on a Varian liquid chromatograph equipped with three SEC columns from Supelco (G6000-4000-2000 HXL) and triple detectors (refractive index, UV and light scattering detectors) from Viscotek Co.

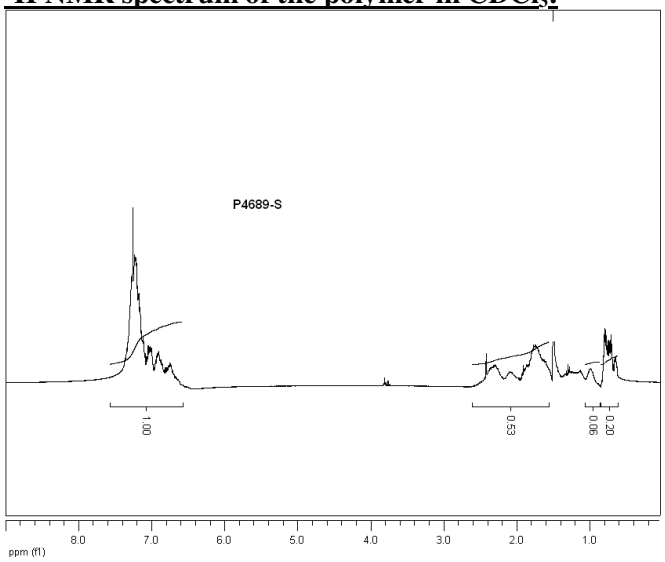
Thermal Analysis:

Thermal analysis was performed on TA Instruments Q100 differential scanning calorimeter (DSC) under a nitrogen atmosphere. The glass transition temperature (T_g) of the polymer was measured at a scan rate of 10°C/min shortly after creating thermal history of the sample.

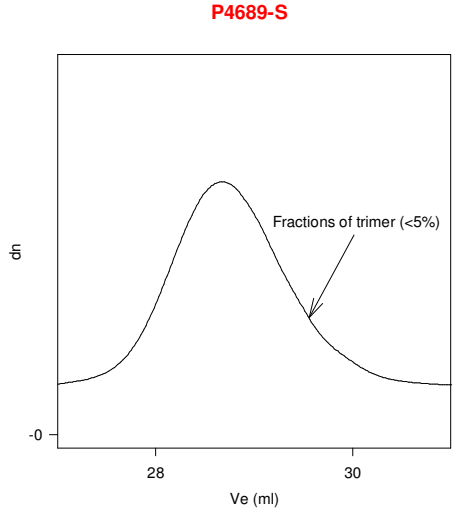
Solubility:

Polystyrene is soluble in DMF, THF, toluene, chloroform; and it precipitates from methanol, ethanol, hexanes, and water.

^{1}H NMR spectrum of the polymer in $CDCl_3$:



SEC elugram of the polymer:



Size Exclusion Chromatography of polystyrene
M_n=800, M_w=890, M_w/M_n=1.12 From ^{1}HNMR: Mn : 750

DSC thermogram (2nd heating run, 10°/min):