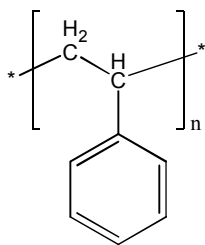


Sample Name: **Polystyrene**

Sample #: **P8094-S**

Structure:

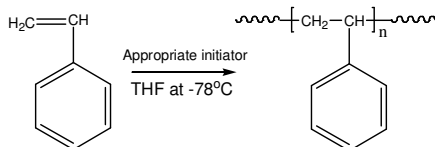


Composition:

$M_n \times 10^3$ (g/mol)	M_w/M_n
0.95	1.2
Glass transition temperature:	$T_g = 7^\circ\text{C}$

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.

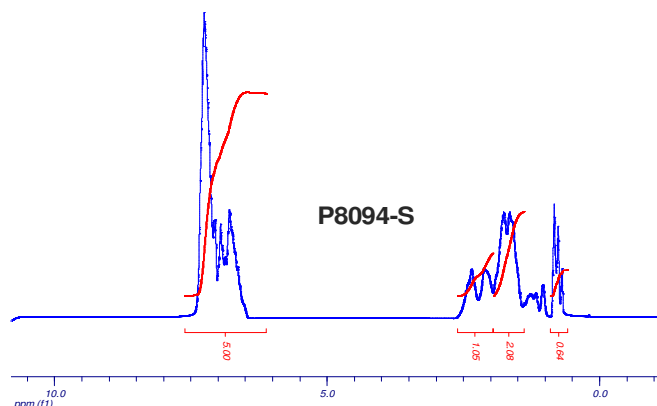
Thermal Analysis:

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:

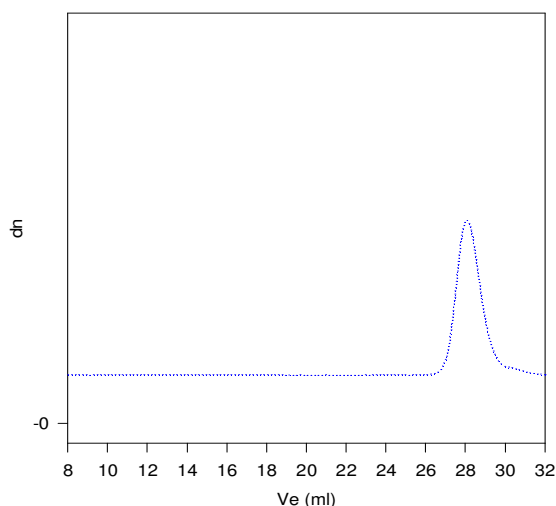
Polystyrene is soluble in DMF, THF, toluene, chloroform; and it precipitates from methanol, ethanol, hexanes, and water.

¹H NMR spectrum of the polymer in CDCl₃:



SEC elugram of the polymer:

P8094-S



Size Exclusion Chromatography of polystyrene

$M_n=950$, $M_w=1400$, $M_w/M_n=1.20$

M_n by HNMR: 950

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

