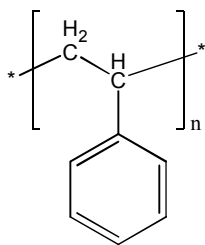


**Sample Name:** Polystyrene

**Sample #:** P9720-S

**Structure:**

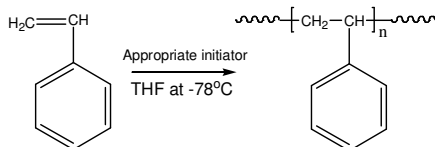


**Composition:**

$M_n \times 10^3$ (g/mol)	$M_w/M_n$
1.3	1.08
Glass transition temperature:	$T_g = 51^\circ\text{C}$

**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.

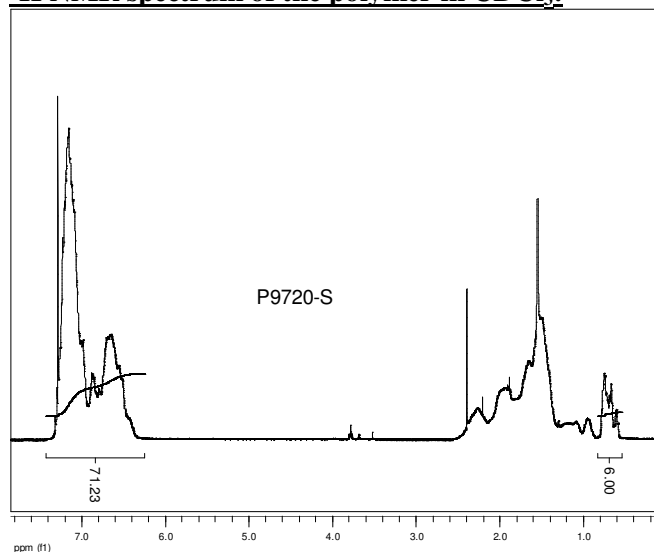
**Thermal Analysis:**

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  $10^\circ\text{C}/\text{min}$  shortly after creating thermal history of the sample.

**Solubility:**

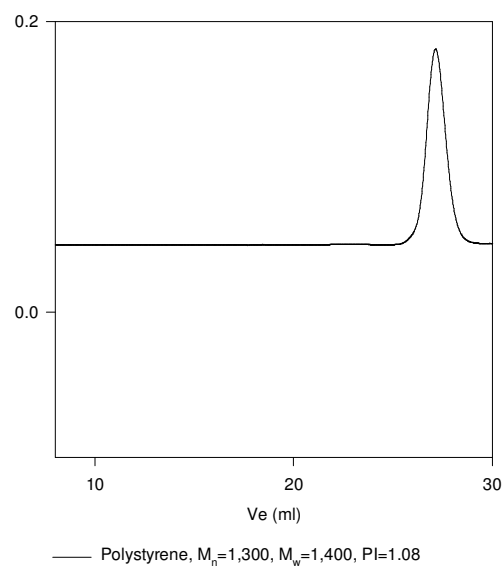
Polystyrene is soluble in DMF, THF, toluene, and chloroform; and it precipitates from methanol, ethanol, hexanes, and water.

**$^1\text{H}$  NMR spectrum of the polymer in  $\text{CDCl}_3$ :**



**SEC elugram of the polymer:**

P9720-S



**DSC thermogram (2<sup>nd</sup> heating run,  $10^\circ/\text{min}$ ):**

