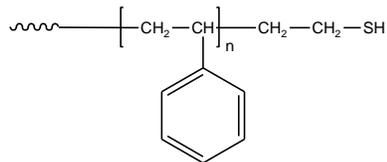


### Sample Name:

### Thiol Terminated Polystyrene

### Sample #: P4428-SSH

### Structure:



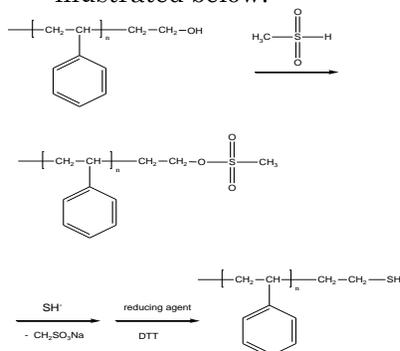
### Composition:

Mn x 10 <sup>3</sup>	PDI
6.5	1.18
SH- Functionality	>95%
T <sub>g</sub> (°C)	33

### Synthesis Procedure:

SH end functionalized polystyrene can be synthesized quantitatively by 2 different approaches:

1. From hydroxy terminated polymer as illustrated below:



2. From direct termination of anionic living polymerization of styrene by ethylene sulfide or propylene sulfide. Polymerization of styrene by Sec.BuLi in THF at -78 °C and termination by purified ethylene sulfide or propylene sulfide.

### Characterization:

The molecular weight and polydispersity index of the hydroxyl terminated polymer were determined before functionalization with thiol by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector. Polymer functionality was verified by oxidation of thiol to disulfide.

### Thermal Analysis:

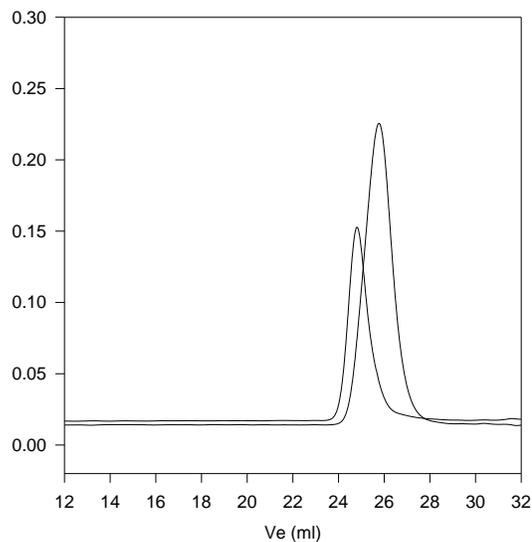
Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min. The inflection glass transition temperature (T<sub>g</sub>) of the sample has been considered.

### Solubility:

Polymer is soluble in THF, CHCl<sub>3</sub> and toluene.

### SEC of the sample:

#### P4428-SSH (PS<sub>t</sub>-CH<sub>2</sub>CH<sub>2</sub>SH)



Size exclusion chromatograph of thiol terminated polystyrene:

— M<sub>n</sub>=6500 M<sub>w</sub>=7600 PI=1.18 (before termination with ethylene sulfide)

— after oxidation with iodine, indicating quantitative functionalization

### DSC thermogram for the polymer:

