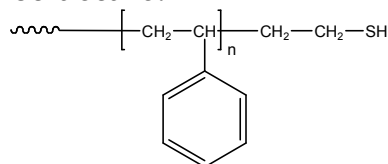


Sample Name:

Thiol Terminated Polystyrene

Sample #: **P4430-SSH**

Structure:



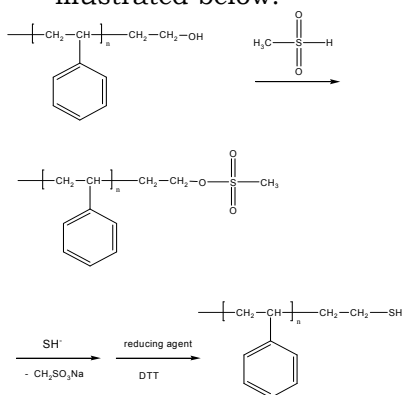
Composition:

Mn x 10 ³	PDI
5.3	1.10
SH- Functionality	>95%
T _g (°C)	80

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:

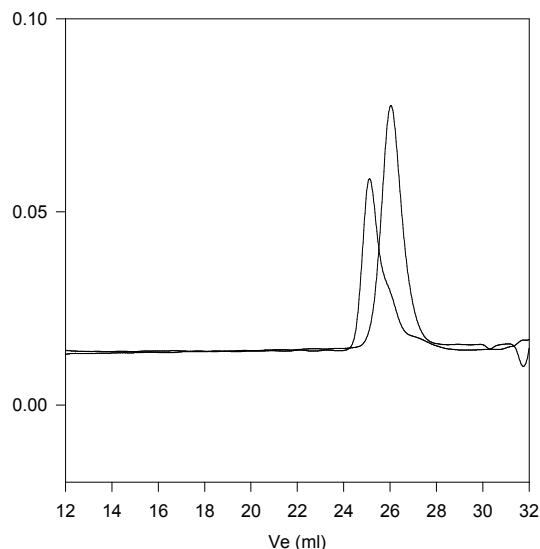
Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min. The inflection glass transition temperature (T_g) of the sample has been considered.

Solubility:

The polymer is soluble in THF, CHCl₃ and toluene.

SEC of Sample:

P4430-SSH (PSt-CH₂CH₂SH)



Size exclusion chromatograph of thiol terminated polystyrene:

- Mn=5300 Mw=5800 PI=1.10 (before termination with ethylene sulfide)
- after oxidation with iodine, indicating quantitative functionalization

DSC thermogram for the polymer:

