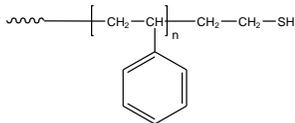


Sample Name:

Thiol Terminated Polystyrene

Sample #: P4421-SSH

Structure:



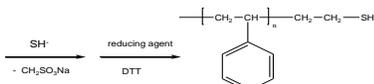
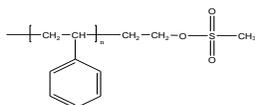
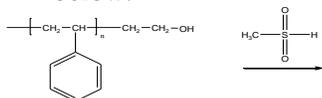
Composition:

| | |
|----------------------|------|
| Mn x 10 ³ | PDI |
| 1.8 | 1.4 |
| SH- Functionality | >98% |
| T _g (°C) | 07 |

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 oC 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:

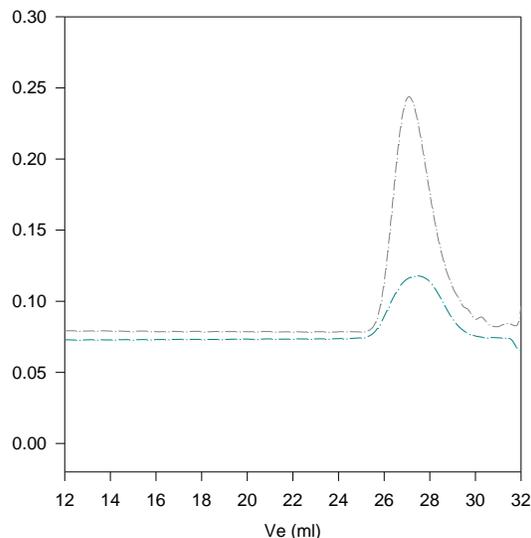
Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min. The inflection glass transition temperature (T_g) of the sample has been considered.

Solubility:

Polymer is soluble in THF, CHCl₃ and toluene.

SEC of the sample:

P4421-SSH (PSI-CH₂CH(CH₃)SH)



Size exclusion chromatograph of thiol terminated polystyrene:

- M_n=1800 M_w=2500 PI=1.4 (before termination with propylene sulfide)
- After termination with ethylene sulfide (SH functionality over 98%)
- · - after oxidation with iodine, indicating quantitative functionalization

DSC thermogram for the polymer:

