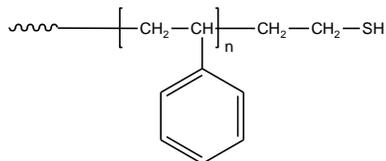


## Sample Name: Thiol Terminated Polystyrene

Sample #: P42118-SSH

### Structure:



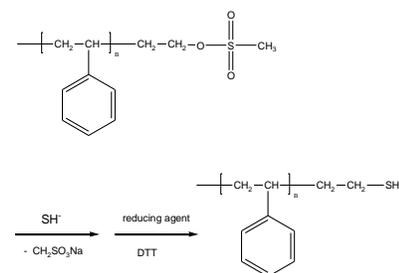
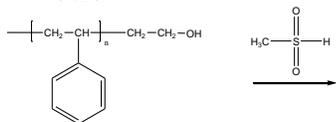
### Composition:

$M_n \times 10^3$	PDI
22.0	1.01
SH- Functionality	>95%
$T_g$ (°C)	96

### 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  $\text{Sec.BuLi}$  in THF at  $-78^\circ\text{C}$  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:

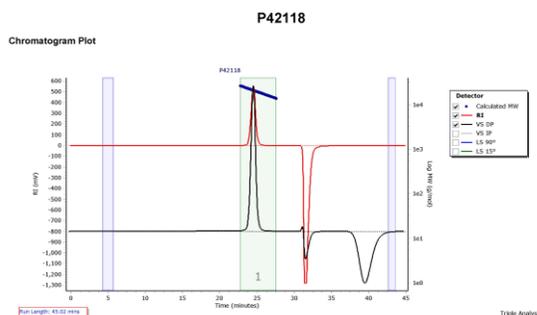
Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of  $10^\circ\text{C}/\text{min}$ . The inflection glass transition temperature ( $T_g$ ) of the sample has been considered.

### Solubility:

Polymer is soluble in THF,  $\text{CHCl}_3$  and toluene.

### SEC of the Sample before termination with SH:

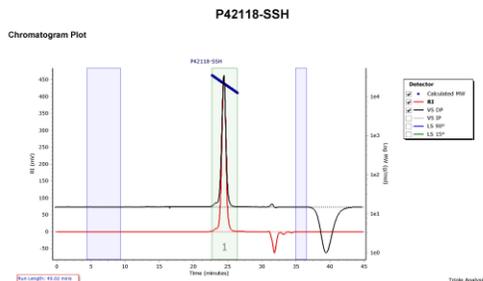
Agilent GPC/SEC Software



Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz+1 (g/mol)	Mv (g/mol)	PD
Peak 1	21139	21133	21179	21224	21268	21221	1.002

### SEC elugram of the Product:

Agilent GPC/SEC Software



Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz+1 (g/mol)	Mv (g/mol)	PD
Peak 1	21884	21914	22131	22357	22599	22319	1.01

### DSC thermogram for the polymer:

