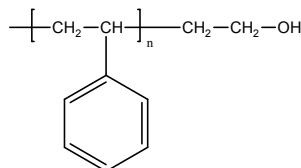


Sample Name:
Hydroxy Terminated Polystyrene

Sample #: P5463- SOH

Structure:

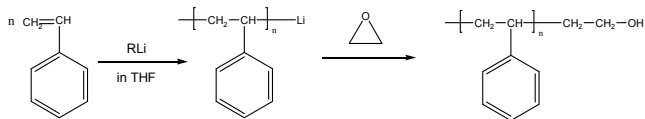


Composition:

Mn x 10 ³	PDI
2.7	1.08

Synthesis Procedure:

ω -Hydroxy terminated Polystyrene was prepared by living anionic polymerization of styrene using a monofunctional initiator in THF followed by termination with ethylene oxide. The scheme of the reaction is illustrated below:



Characterization:

The molecular weight and polydispersity index of this polymer were determined by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector. Polymer functionality was determined by titration with NaOH using phenolphthalein as the indicator.

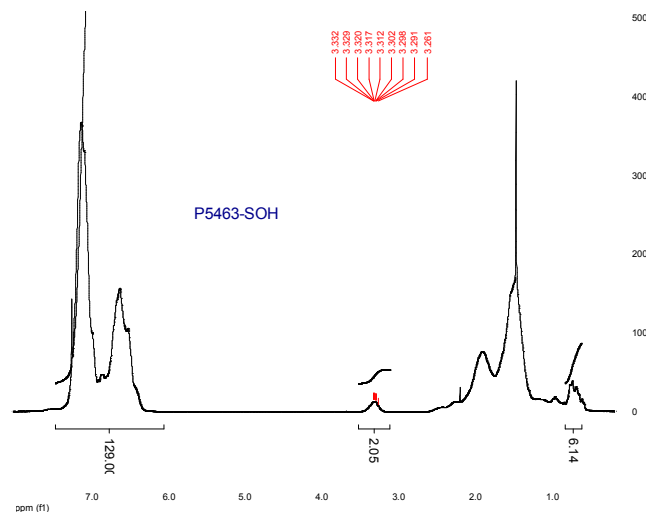
Thermal analysis:

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) has been considered.

Solubility:

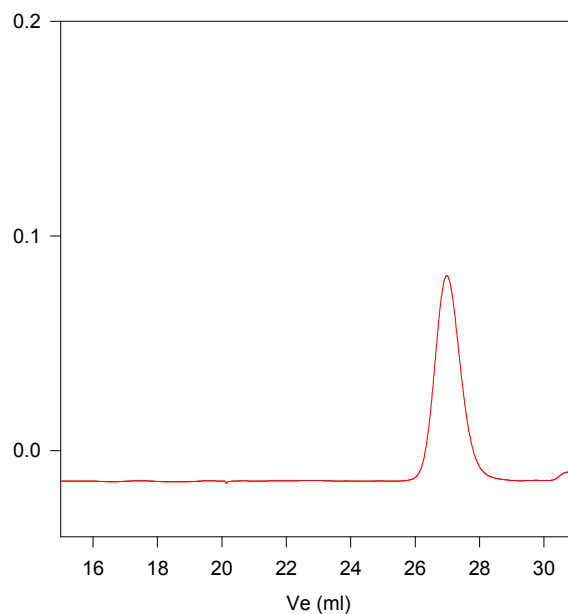
Polymer is soluble in toluene, THF, CHCl₃ and can be precipitated in water and cold methanol.

¹H NMR of the polymer:



SEC of Sample:

P5463-SOH



Size exclusion chromatography of ω hydroxy Terminated polystyrene:
 $M_n=2700$, $M_w=2900$, $PI=1.07$, functionality>99%

(PSOH) both having M_n of 1700 are compared at heating rate of 10°C/min. It has been found that the T_g of PSOH was 13°C higher (64°C) than the corresponding PS (51°C). Results are shown below:

Polystyrene		Hydroxy terminated PS	
$M_n \times 1000$	T_g (°C)	$M_n \times 1000$	T_g (°C)
0.95	27	0.90	37
1.7	51	1.7	64
3.7	71	3.7	72