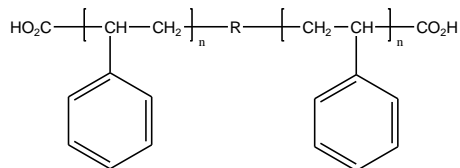


Sample Name:

α,ω -Carboxy Terminated Polystyrene

Sample #: P8888-S2COOH

Structure:

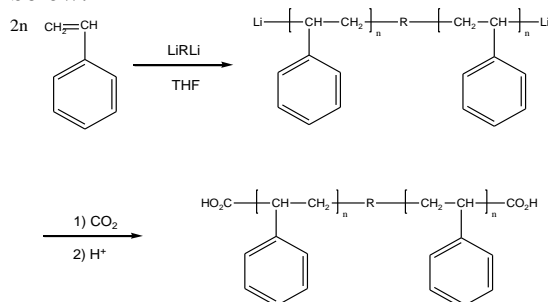


Composition:

$M_n \times 10^3$	PDI
14.6	1.10
Functionality	>1.98
T_g (°C)	103

Synthesis Procedure:

The functionalized polymer was prepared by anionic living polymerization of styrene using bifunctional as initiator in THF followed by terminating the polymerization reaction with dried CO_2 . The scheme of the reaction is illustrated below:



Characterization:

The molecular weight and polydispersity index of this polymer were determined before the addition of the carboxy function by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector. In our columns the polymer after termination with CO_2 the elution is retarded. This is because of the strong interaction with the column packing material. Furthermore the M_w/M_n broadens because of that reason.

Polymer functionality was determined by the titration with NaOH using phenolphthalein as the indicator.

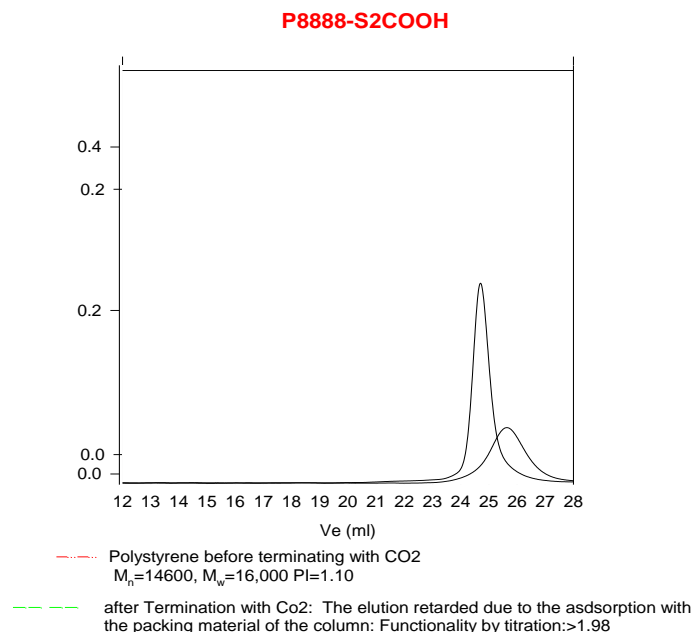
Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of $10^\circ\text{C}/\text{min}$. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

Polymer is soluble in THF, Dioxane, CHCl_3 and precipitated out from methanol/water, and in cold hexane.

SEC of Sample:



DSC thermogram for the polymer:

