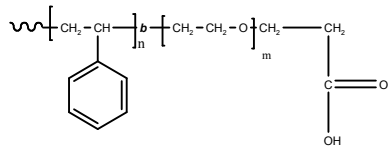


Sample Name: Carboxylic acid terminated
Poly(styrene-b-ethylene oxide)
Sample #: P18154-SEOCOOH

Structure:

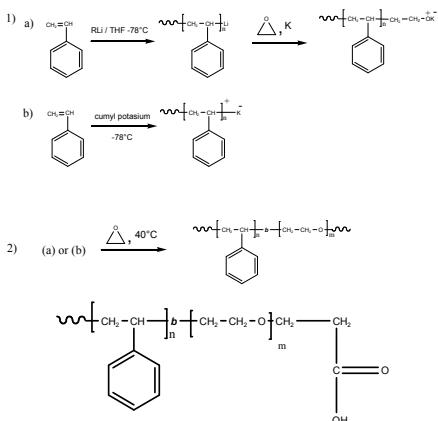


Composition:

Mn x 10 ³ S-b-EO	PDI	COOH Functionality
9.5-b-18.0	1.09	>98%

Synthesis Procedure:

Poly(styrene-b-ethylene oxide) diblock copolymer is prepared by living anionic polymerization. Following are the 2 possible routes that were used to synthesize SEO. The scheme of the reaction is illustrated below: The obtained polymer chains bear a terminal OH group that reacted with tert.butyl acrylate in the presence of appropriate solvent than the tert.butyl ester terminal converted to free COOH group.



Characterization:

The molecular weight and polydispersity index (PDI) of the block copolymer are characterized by size exclusion chromatography (SEC). The composition of the block copolymer was calculated from ¹H-NMR by comparing the peak area of the phenyl polystyrene protons between 6.4 to 7.2 ppm and the ethylene oxide protons at 3.65 ppm.

FTIR: Product was also analysed by FTIR : Presence of C=O ester at 1740cm⁻¹ and after the hydrolysis of tert.butyl ester to free COOH end group.

Solubility: The polymer is soluble in THF (at 35 °C), CHCl₃, benzene, toluene, dioxane. Low molecular weight SEO with high contents of the polyethylene oxide block can also be solubilized in methanol and water.

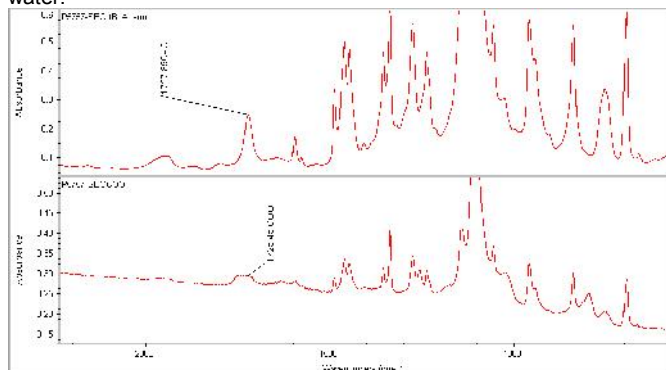
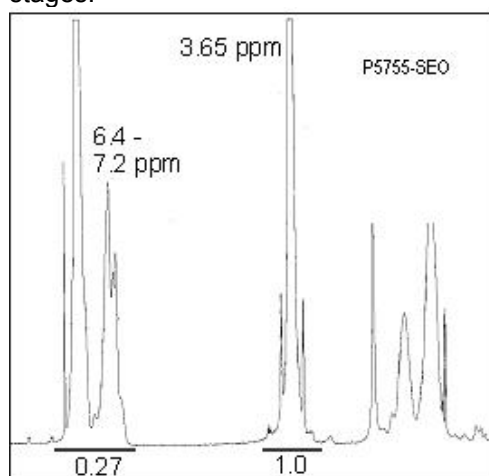


Figure: ¹H NMR spectrum of the sample at different stages:



HNMR of PSEOCOOTertBu

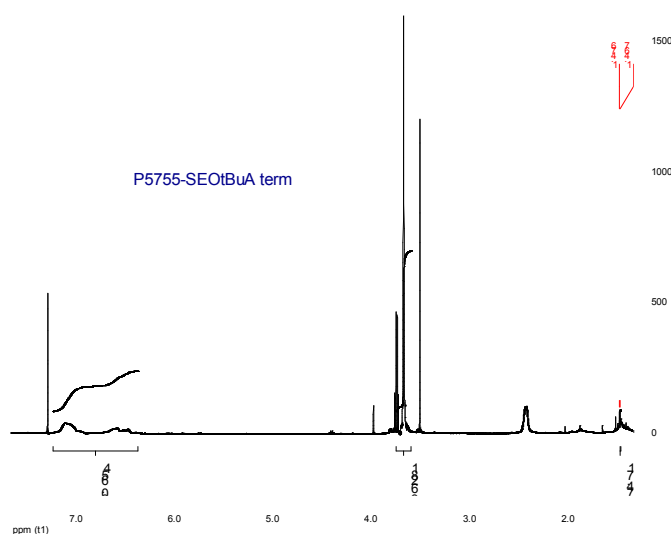


Figure: SEC profile of the block copolymer

