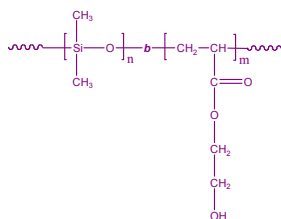


Sample Name: Poly(dimethyl siloxane-b-hydroxy ethyl acrylate)

Sample # P6798-DMSHEA

Structure:

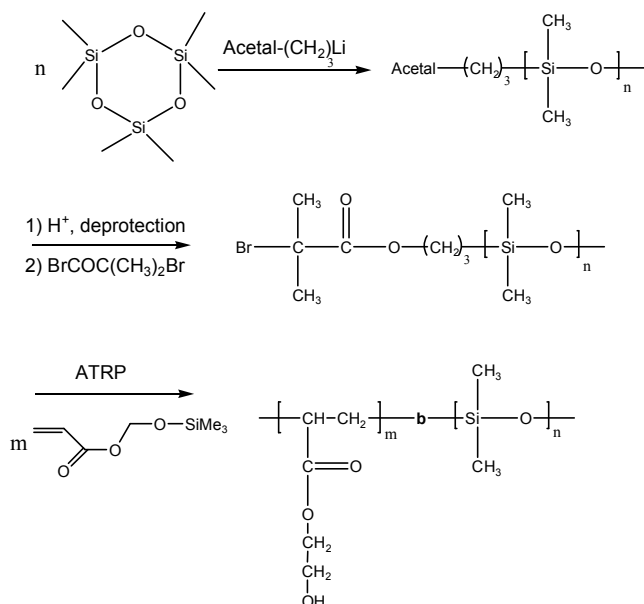


Composition:

$M_n \times 10^3$ DMS-b-SHEA	M_w/M_n (PDI)
8.0-b-7.0	1.30

Synthesis Procedure:

Poly(dimethylsiloxane-b-hydroxy ethyl acrylate) is prepared by living anionic polymerization of hexamethyl cyclotrisiloxane followed by controlled radical polymerization of trimethylsiloxylethyl methacrylate. The reaction scheme is illustrated below:



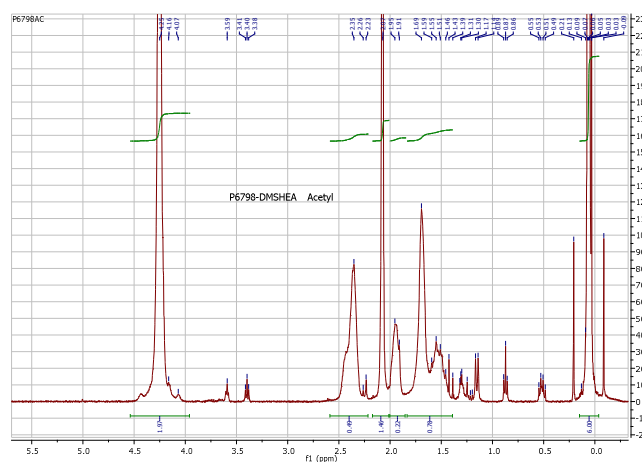
Characterization:

An aliquot of the anionic poly(dimethylsiloxane) block was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI) before polymerization of HEA-TMS. The final block copolymer composition was calculated from ^1H NMR spectroscopy by comparing the peak area of the dimethyl siloxane protons near 0.08 ppm with the methylene protons of acrylate at about 4.2 ppm. Block copolymer PDI is determined by SEC.

Solubility:

Poly(dimethylsiloxane-b-HEA) diblock copolymer solubility depends on the compositions. If the % of HEA is greater or equal to PDMS fractions that might not be soluble in CHCl_3 or THF. One has to play around with the combination of solvents such as methanol/THF or CHCl_3 /methanol or THF/DMF. For the characterization of diblock copolymer with high % of HEA was converted to acetyl hydroxy ethyl acrylate by reacting with acetic anhydride in the presence of pyridine at room temperature or 40 °C and characterized the product by Size exclusion chromatography for its composition.

^1H NMR spectrum of the sample



SEC profile of the block copolymer

