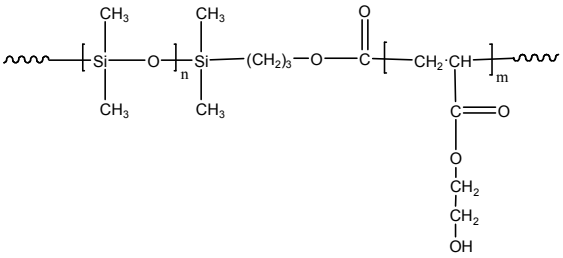
<u>Sample Name</u>: Poly(dimethyl siloxane-b-hydroxy ethyl acrylate)
Sample # P9415-DMSHEA (contain traces amount of methanol/THF to avoid the the formation of crosslinked polymer due to the presence of traces amount of diacrylate fractions in 2-Hydroxy ethyl acrylate monomer)

Structure:

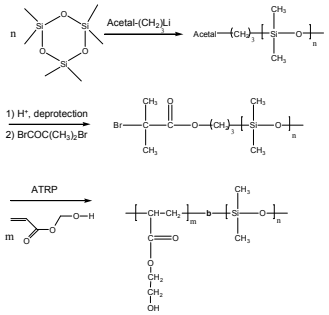


Composition:

Mn × 10^3 DMS-b-SHEA	Mw/Mn (PDI)
8.0-b-28.0	1.35

Synthesis Procedure:

Poly(dimethylsiloxane-b-hydroxy ethyl acrylate) is prepared by living anionic polymerization of hexamethyl cyclotrisiloxane followed by controlled radical polymerization of hydroxyethyl acrylate. Purification of the HEA monomer is important to avoid the presence of any diacrylate presence that might results in crooslinked product in the final stages of the polymerization. HEA monomer was distilled and take only the middle fraction to minimize the presence of traces amount of dicarylate in the distilled monomer.



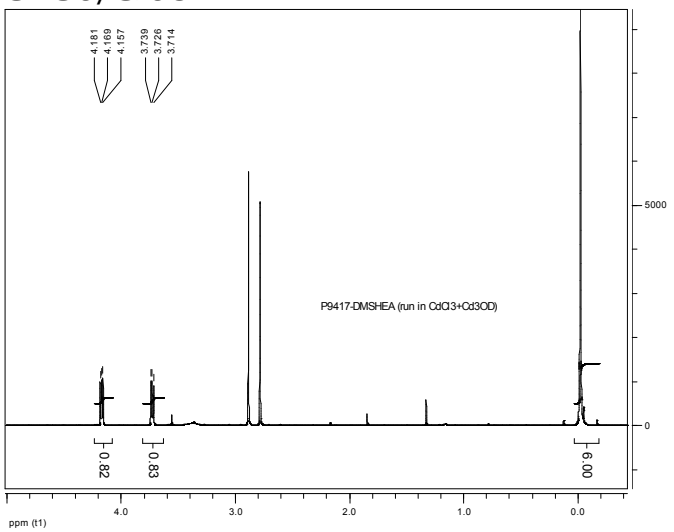
Characterization: as published in :

J.X. Zhang, S.K. Varshney, "Simple Approach for the Scale-up Production of Block Copolymer of Polydimethylsiloxane with (Meth)acrylic Ester Monomers" Designed Monomers and Polymers, 2002, 1, 79.

Solubility:

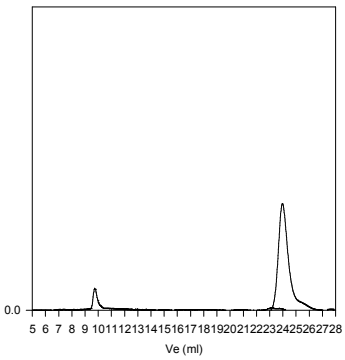
Poly(dimethylsiloxane-b-HEA) diblock copolymer solubility is depends on the compositions. If the % of HEA is greater or equal to PDMS factions that might not be soluble in CHCL3 or THF. One has to play around with the combination of solvents such as methanol/THF or CHCCl3/methanol or THF/DMF . For the characterization of diblock copolymer with high % of HEA was converted to acetyl hyroxy ethyl acrylate by reacting with acetic anhydride in the presence of pyridine at room temperature or 40 oC and characterized the product by Size exculsuion chromatography for its composition.

^{1}H NMR spectrum of the sample in CDCl3/Ch3OD



SEC profile of the block copolymer

P9415-DMSHEA

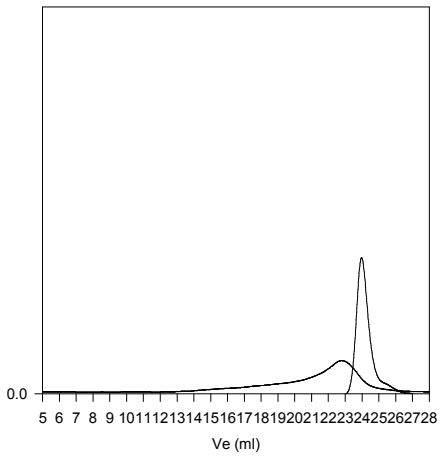


Polydimethylsiloxane block, M_n=8000, M_w=8600, PI=1.08

Block Copolymer PDMS(8000)-b-PHEA(28000), PI=1.3
Composition from H NMR (elution count for the block copolymer is retarded)
In THF/Methanol mixture elution shows micellization with ultrahigh molecular weight fraction

After converting PHEA fraction to 2-Acetyl ethyl acrylate by treating polymer with acetic anhydride /pyridine/acetic acid

P9415-DMSHEA



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