

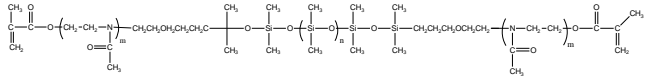
Sample Name:

Methacrylate End Functionalized Poly(2-methyloxazoline-b-dimethylsiloxane-b-2-methyloxazoline) Triblock Copolymer

Copolymer

Sample #: **P18241—MA-MOXZDMSMOXZ-MA**

Structure:



Composition:

Mn x 10 ³	PDI
2.5-b-11.5-b-2.5	1.3

Synthesis Procedure:

The α -(ω) dihydroxy terminated Poly(2-methyloxazoline-b-dimethylsiloxane-b-2-methyloxazoline) triblock copolymer was prepared by combination of anionic living polymerization of hexamethylcyclotrisiloxane (D3) and cationic polymerization of 2-methyl oxazoline, using difunctional initiator. The methacryloyl end-group was achieved quantitatively by terminating reaction with methacrylic acid in the presence of triethyl amine. The termination reaction was carried out at 40 °C for 3 days. Polymer was recovered in cold acetone, wash couple of times with cold acetone to remove the unreacted methacrylic acid and other side products.

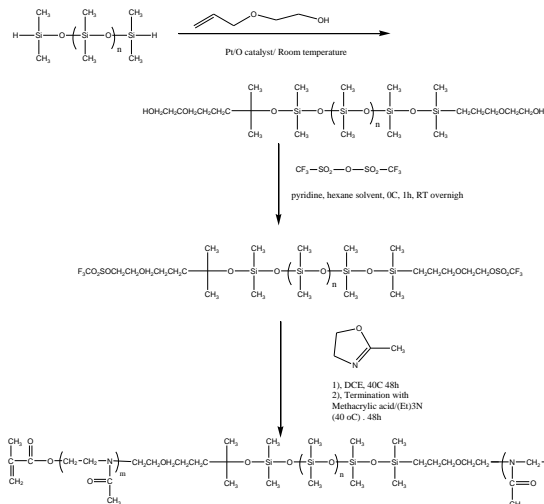
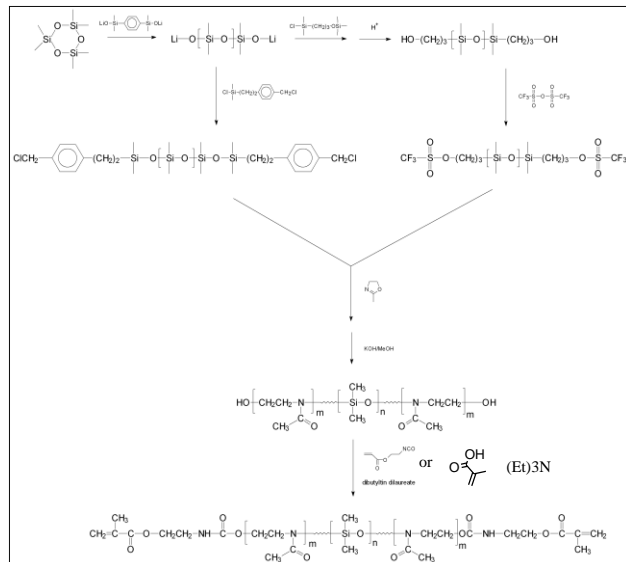
Characterization:

Central Block: Size exclusion chromatography (SEC): Varian liquid chromatograph equipped with UV and refractive detector. SEC columns from Supelco were used with THF (or toluene) as the eluent. The columns were calibrated with monodisperse poly(dimethyl siloxane). The molecular weights and the polydispersity indices were calculated.

Side Block: The chemical composition was extracted from proton NMR, which was recorded from Varian 500MHz instrument using CDCl₃ as solvent. The molecular weight of side block was calculated based on the molecular weight of central block and the chemical composition. The polydispersity index of block copolymer was obtained by SEC as described above.

Functionality: The end-groups for each step were determined by ¹H NMR as mentioned above.

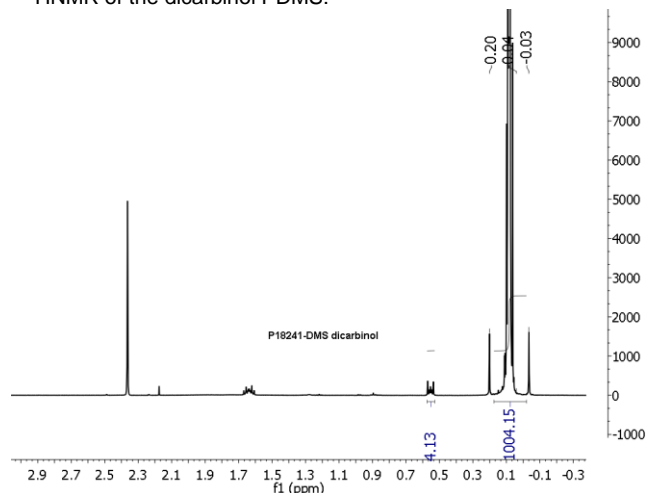
The reaction of polymerization can be illustrated as follows:



SEC of Sample:

The block copolymer can not be eluted in our SEC, the composition of the block copolymer was determined from the HNMR by knowing the molecular mass of the starting PDMS dicarbinol terminated PDMS: Mn 11,500

HNMR of the dicarbinol PDMS:



HNMR of the ABA Triblock end functionalized with Methacrylate:

