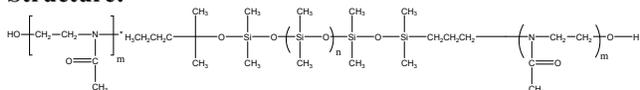


Sample Name:

Poly(2-methyloxazoline-b-dimethylsiloxane-b-2-methyloxazoline) Triblock Copolymer

Sample #: P11019-MOXZDMSMOXZ

Structure:



Composition:

Mn x 10 ³	PDI
0.250-b-8.0-b-0.250	1.2
Degree of Polymerization: 3-108-3	

Synthesis Procedure:

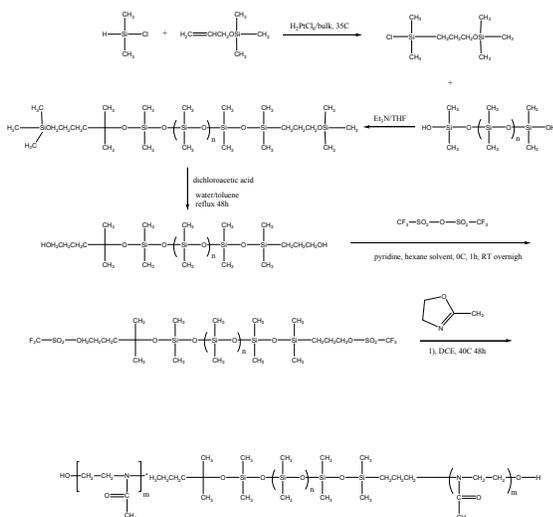
The α-ω dihydroxy terminated Poly(2-methyloxazoline-b-dimethylsiloxane-b-2-methyloxazoline) triblock copolymer was prepared by combination of anionic living polymerization of hexamethylcyclotrisiloxane (D3) and cationic polymerization of 2-methyl oxazoline, using difunctional initiator. Polymer was recovered in cold acetone, wash couple of times with cold acetone to remove the unreacted monomer 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 and for the block copolymer in DMF as the eluent. The columns were calibrated with monodisperse poly(dimethyl siloxane). The molecular weights and the polydispersity indice 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.

The reaction of polymerization can be illustrated as follows:



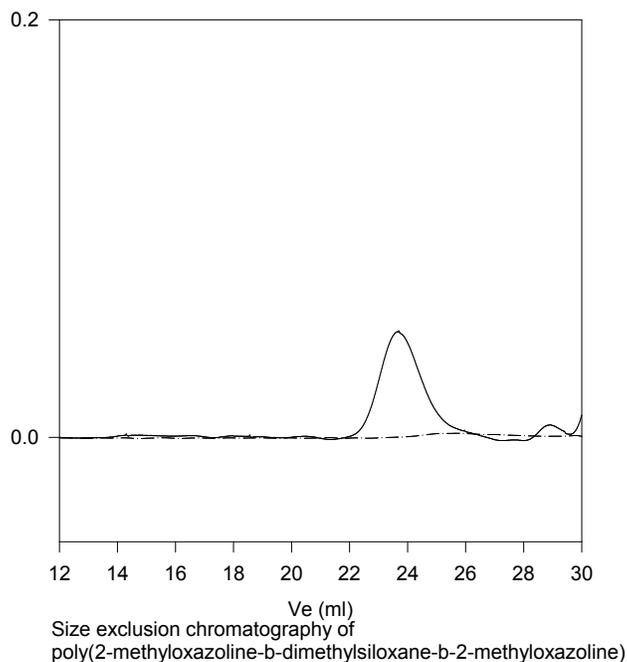
Solubility of the Polymer:

1. Soluble in THF with opaque characteristics. Adding a drop of methanol gives very clear solution
2. Sparingly soluble in DMF and addition of methanol a clear solution

It is difficult to characterize by SEC due to strong adsorption with the column packing materials. It was eluted in THF with methanol for the molecular weight distribution purposes.

SEC of Sample:

P11019-MOXZDMSMOXZ



- Polydimethylsiloxane M_n=8,000, M_w=9600, PI=1.20
- - - Triblock copolymer: could not be eluted THF as eluent
Composition from ¹H NMR: MOXZ-b-DMS-b-MOXZ
Mn: 250-b-8000-b-250
degree of polymerization: MOXZ₍₃₎-b-DMS₍₁₀₈₎-b-MOXZ₍₃₎

¹H NMR of the Polymer:

