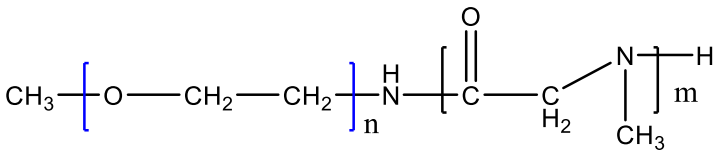
Product Profile

Identification

Product Name: Poly(ethylene glycol)-b-poly(sarcosine)
Polypeptoids from N-Substituted (methyl)Glycine N-Carboxyanhydrides and polyethylene glycol

Product Number: P44753-mPEG-Sarcosine

Product Chemical Architecture:



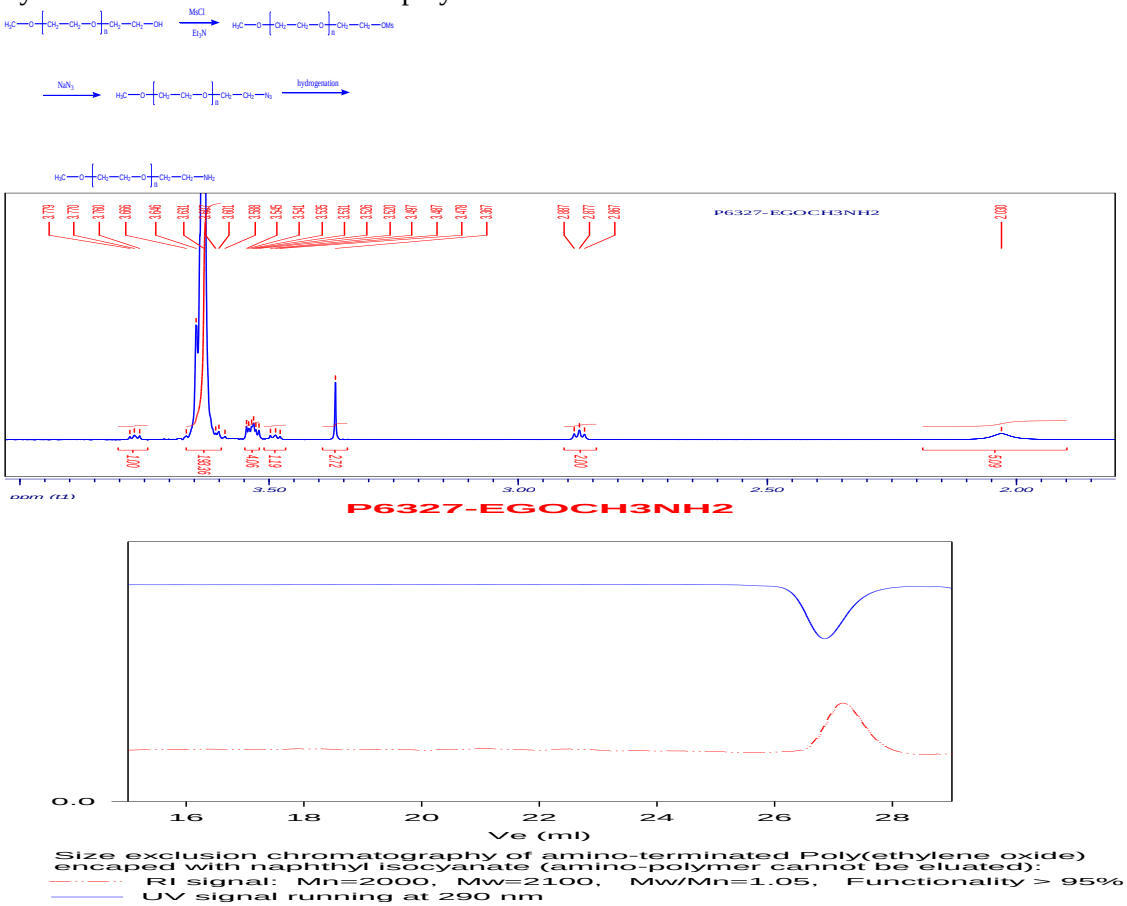
Composition:

Mn x 10^3 mPEG-b-Sarcosine	Mw/Mn (PDI)	Dp of each block: from ^{H} NMR
2.0-0.4	1.05	mPEG $_{45}$ -b-Sarcosin $_{5}$

Method of Synthesis

The polymer is synthesized by anionic and ring opening polymerization using NH2 end functionalized Polyethylene glycol methyl ether) initiator in 2 steps synthesis.

A. Synthesis of NH2 end terminated poly mPEG Lot# P6327mPEG-NH23

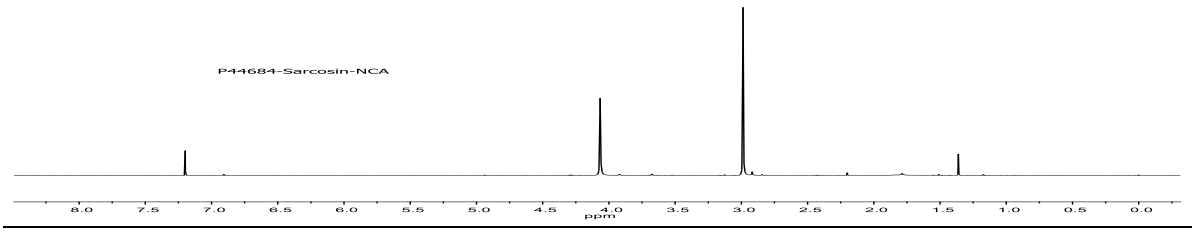


B. Ring Polymerization of Sarcosine-NCA using mPEG-NH2 macroinitiator.

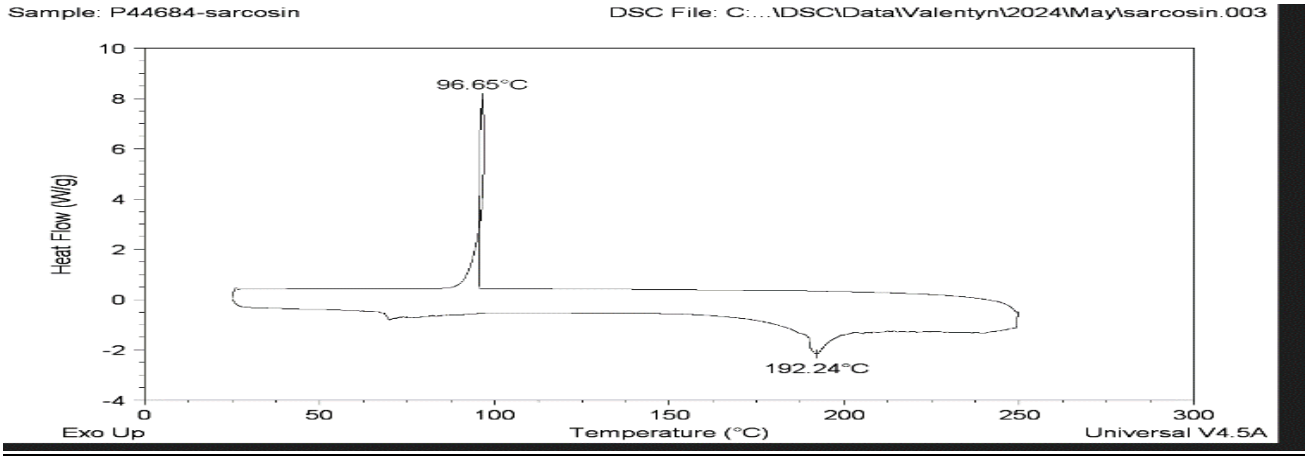
C. Sarcosin-NCA Monomer preparation

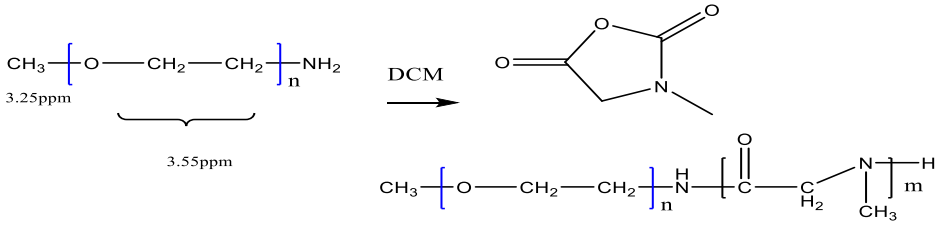
Sarcosine-NCA. By freshly ground sarcosine and triphosgene in dry THF (ratio of sarcosine and triphosgene 3:1) under steady flow of argon. After addition of triphosgene Argon flow was turned off and the reaction mixture was heated to 65 °C and stirred for 2 h, yielding a clear solution. The solvent was evaporated under reduced pressure, yielding a brownish oil as crude reaction product. The oil was heated to 75 °C and dried under reduced pressure to obtain a solid. The crude product was dissolved in dry THF and added petrolether to get cloudy point. This mixture stands overnight at -18 °C to crystallize. The solid was filtered under argon atmosphere, dried under reduced pressure and subsequently sublimated in vacuo Melting point (mp): 104.4 °C.

^{1}H NMR (500 MHz, CdCl3-d_1):



DSC thermograms:





Solubility in different solvents

THF	√		
H2O	√		
Alcohol	√		

Purification of Polymer: to remove unreacted sarcosine from Soxhlet with Hexane

Validation of Architecture

A. NMR (HNMR) of PolyEthylene Oxide-b-Sarcosin: