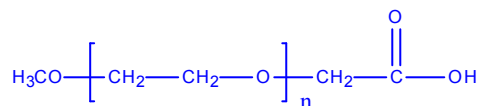


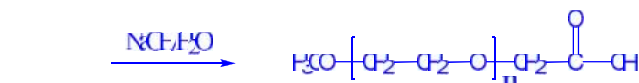
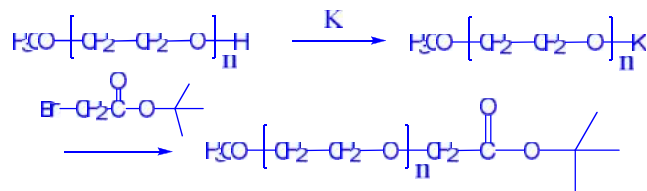
ω-Carboxyl Terminated Poly(ethylene glycol) methyl ether (O-Acetic Acid Ester Terminal group)

Structure:



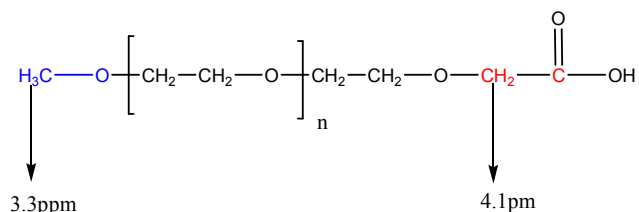
Mn $\times 10^3$	PDI
2.0	1.09
COOH Functionality by HNMR	0.88
COOH functionality by titration	0.93

Carboxy terminated poly(ethylene glycol) was synthesized by anionic living polymerization of ethylene oxide using ethylene glycol/potassium salt as an initiator. The hydroxyl end groups were converted into carboxyl groups by reacting them with 2-bromoacetate or using Jones Reagent (CrO_3 H_2SO_4) as oxidizing agent. The reaction is illustrated as Scheme 1.


$$\text{H}_3\text{C}-\text{O}-\left[\text{CH}_2-\text{CH}_2-\text{O}\right]_n-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-\text{OH}$$

3.3ppm

CrO3/H2SO4



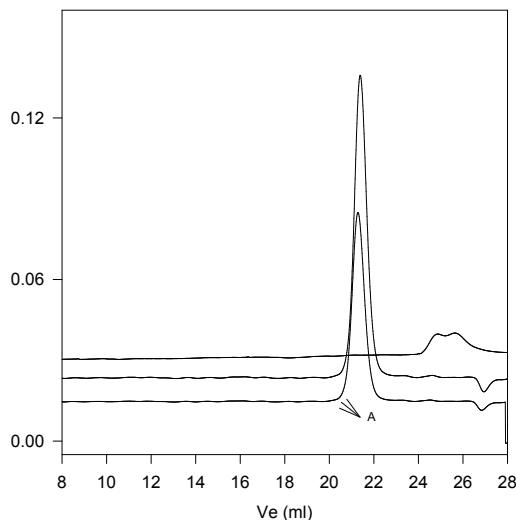
The molecular weight and polydispersity index of this polymer were determined by size exclusion chromatography (SEC) using a Varian liquid chromatograph equipped with a UV and refractive index detector.

Solubility:

Polymer is soluble in water, methanol and ethanol, THF, CHCl_3 . It is precipitated out from cold ethanol, isopropanol, hexane and ether.

1H NMR spectrum of P14172-EGOCH8CH2COOH. The x-axis represents chemical shift in ppm (f1) from 3.00 to 4.00. The y-axis represents intensity from 0 to 2500. The spectrum shows three main signals: a multiplet at ~3.8 ppm (integral 2.00), a large multiplet at ~3.6 ppm (integral 7.00), and a multiplet at ~3.4 ppm (integral 3.00).

P14172-EGOCH₃CH₂COOH



It elution retarded; By converting terminal COOH back to its ester (A):