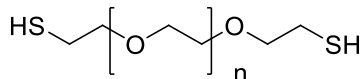


Sample Name: Poly (ethylene glycol), α,ω -bis(thiol)-terminated

Sample # P41822-EG2SH

Structure:



Composition:

Mn x 10 ³ (g/mol)	PDI
3.4	1.04

*Mn is based on starting material.

-SH functionality:	>92%
S-S	<1%
-O-CH ₂ CH ₂ -S-K	5%
Other: free -OH, mesylate, tributyl phosphine	<2%

Synthesis Procedure:

The polymer was prepared by anionic polymerization process and modifications of terminal -OH to -SH groups.

Reference:

S. K. Varshney, J.X. Zhang, Apply US patent 09/895,323, 2001. Heterofunctional Polyethylene glycol and Poly ethylene oxide, process for their Manufacture.

Characterization:

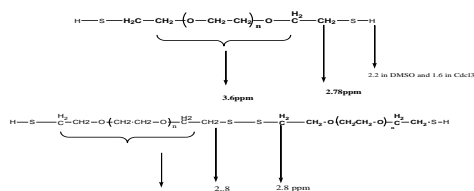
The product was characterized by size exclusion chromatography (SEC), and ¹H NMR.

Functionality

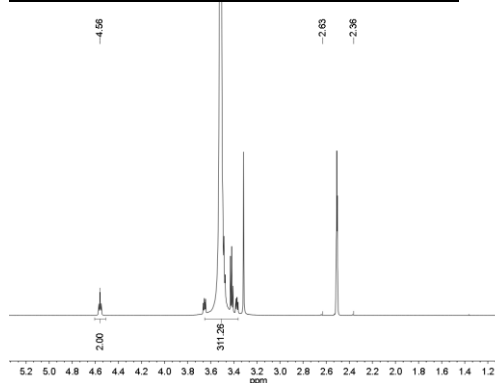
It was determined by ¹H NMR or FT-IR spectroscopy or by titration.

Solubility:

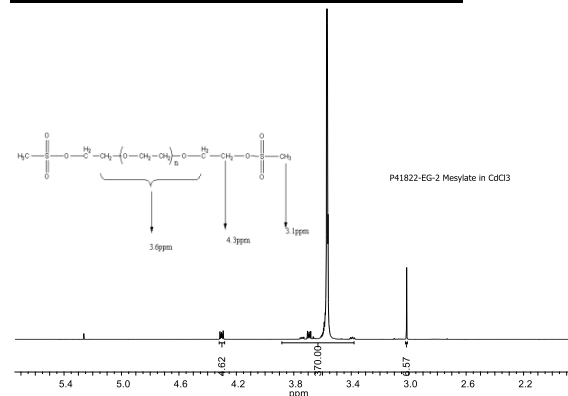
Polymer is soluble in water, methanol and ethanol, THF.



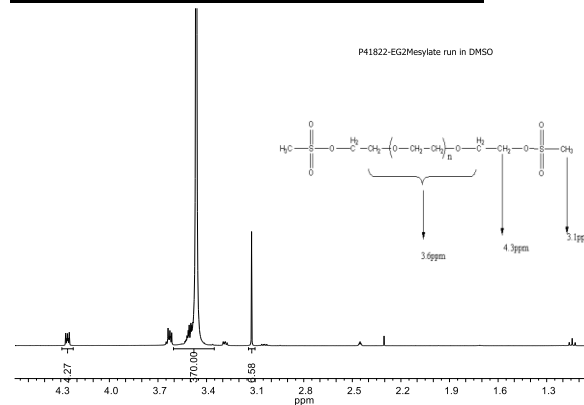
HNMR of PEG2OH run in DMSO:



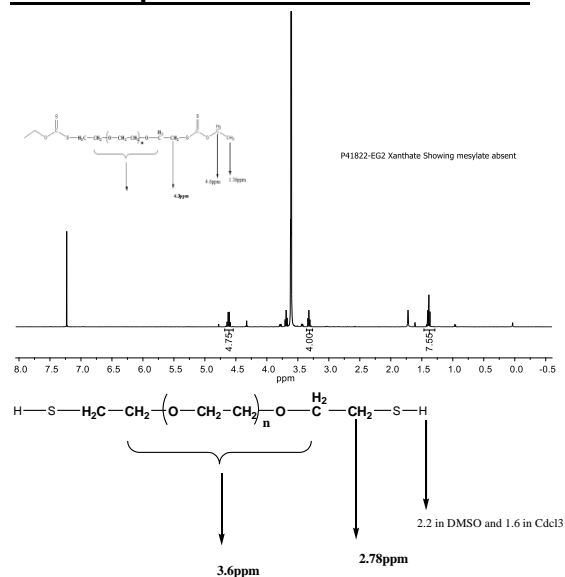
HNMR of 2-Mesylate run in CdCl₃:



HNMR of 2-Mesylate run in DMSO₄:



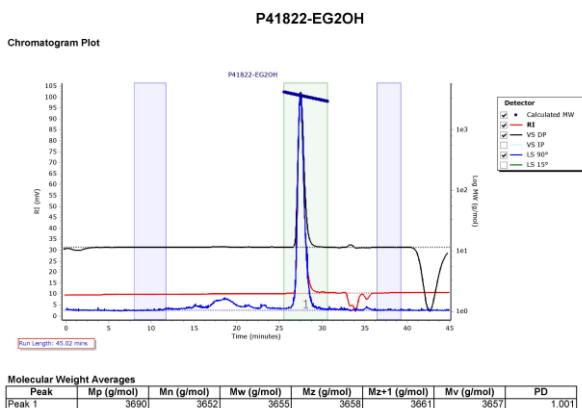
¹H NMR spectrum of the EG-2 Xanthate:



SEC profile of the PEG-2OH Sample:

The EV at peak maxima is : 27.48 elution count:
PEG-2OH starting polymer

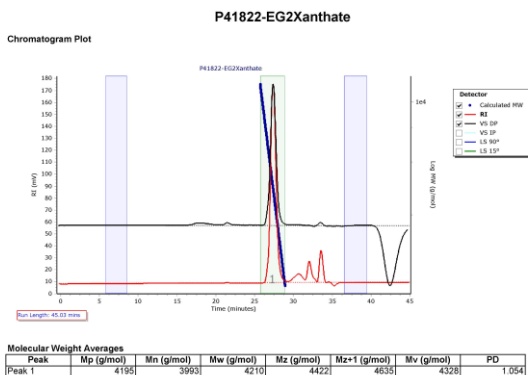
Agilent GPC/SEC Software



SEC profile of the PEG 2Xanthate

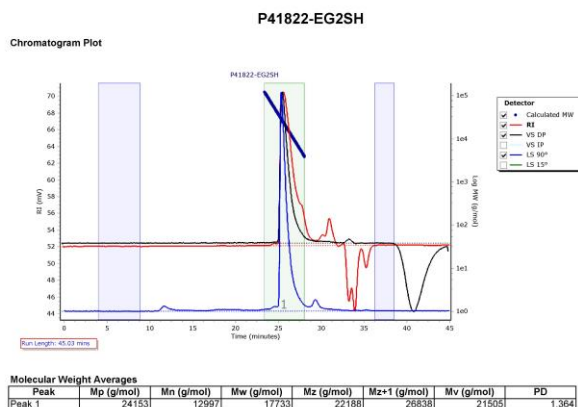
The EV at peak maxima is 27.40 elution count:

Agilent GPC/SEC Software



After cleavage of terminal Xanthate and drying the polymer, showing formation of di sulfide formation Mn increase and broad distribution:

Agilent GPC/SEC Software



Reduction of disulfide to free PEG-2SH

Elution peak maxima 27.5 elution count:

Agilent GPC/SEC Software

