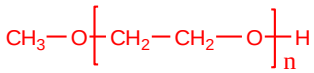
Sample Name:
Poly(ethylene glycol) methyl ether

Sample #: P6274R-EGOCH3

Structure:

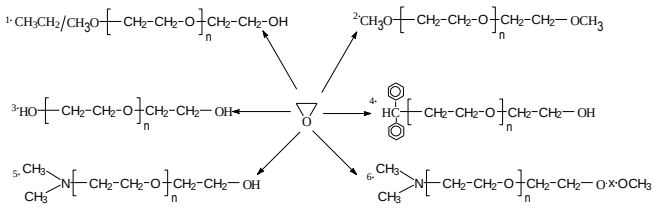


Composition:

Mn × 10^3	PDI
21.5	1.16

Synthesis procedure:

Poly(ethylene glycol) was obtained by living anionic polymerization. The general scheme of reaction is shown below:



	Initiator System	Resulting Polymer
1)	$CH_3OCH_2CH(CH_3)OK$	polyethylene glycol methyl ether
2)	$CH_3OCH_2CH(CH_3)OK$	α, ω-term. methyl ether polyethylene glycol
3)	$KOCH_2CH_2OK$	polyethylene glycol
4)	$CH(C_5H_6)_2CK$	polyethylene glycol diphenyl ether
5)	$(CH_3)_2$ N-CH_2CH_2 OK	methyl amino terminated PEG
6)	$(CH_3)_2$ N-CH_2CH_2 OK	α-methyl amino ω-methyl ether term. PEG

Purification of the obtained polymer:

Purification of the obtained polymer was carried out rigorously as follows to ensure the removal of the catalyst side product:

1. Dissolved the polymer in de-ionized distilled water to remove the any insoluble organic catalyst side product.
2. Polymer extracted from water with dichloromethane.
3. Polymer solution in dichloromethane was dried over anhydrous sodium sulfate.
4. Solution filtered and than passed through a column packed with basic Al_2O_3 .
5. Solution concentrated on rota-evaporator
6. Solution precipitated in cold diethyl ether.
7. Dried under vacuum for 48h at 38 oC.

Solubility:

Poly(ethyl glycol) is soluble in toluene, THF, water, and chloroform. The polymer is insoluble in hexane, ether, cold isopropanol, and ethanol.

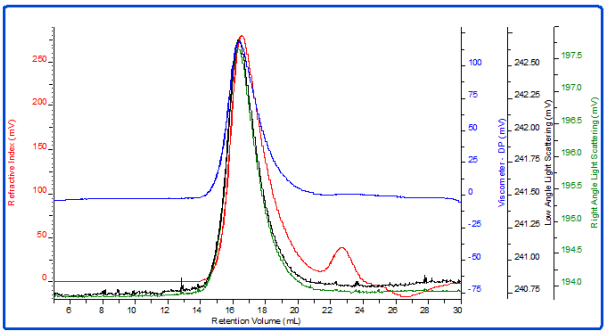
Characterization:

Molecular weight and polydispersity index were determined by size exclusion chromatography (SEC).

SEC chromatogram of lot P6274R in DMF:

P6274-EGOCH3 in DMF

dn/dc	0.0350
Flow Rate	0.7000
Solvent	DMF with LiBr
Method	PSS column-PMMA60K-Jan3-2019-0002.vcm



Sample	Mn	Mw	Mp	Mw/Mn
P6274-EGOCH3	21,564	24,927	25,970	1.156