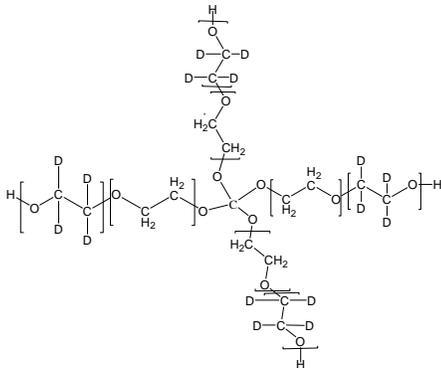


Sample Name: Four arm deuterated Poly ethylene oxide with Protonated pentaerythritol ethoxylate

Sample #: P40737-4dPEO

Structure:



Core : Mn 750 total Each branch ; about Mn 180 (4 units of PEO)

Mn x 10 ³ (total)	PDI
0.9 (4.0)	1.15

Synthesis:

The polymer was synthesized by anionic polymerization process.

Characterization:

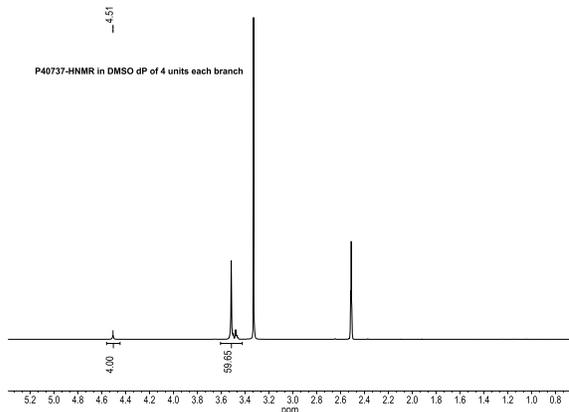
The product was characterized by size exclusion chromatography (SEC) and ¹H NMR and D NMR.

Purification:

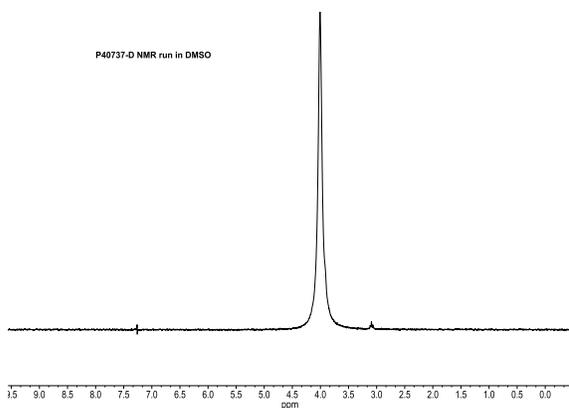
Purification of the obtained polymer was carried out rigorously as follows to ensure the removal of the catalyst side product:

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 Al₂O₃ .
5. Solution concentrated on rota-evaporator
6. Solution precipitated in cold diethyl ether.
7. Dried under vacuum for 48h at 38 oC.

HNMR spectrum of the Polymer:

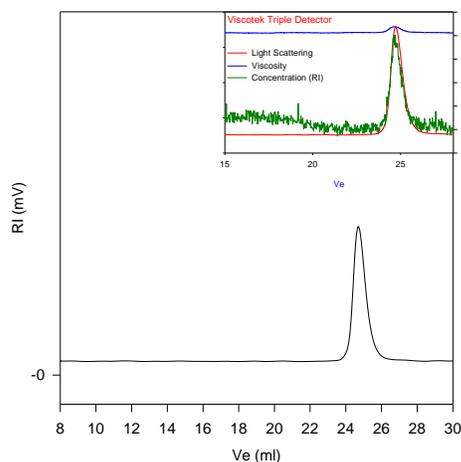


D NMR spectrum of the Polymer:



SEC elugram of the 4EOOH:

P18184-4EOOH



Size Exclusion Chromatography of four arm poly(ethylene oxide)
 — M_n = 8,000, M_w = 9,200, M_w/M_n = 1.15
 Each arm Mn: 2,000