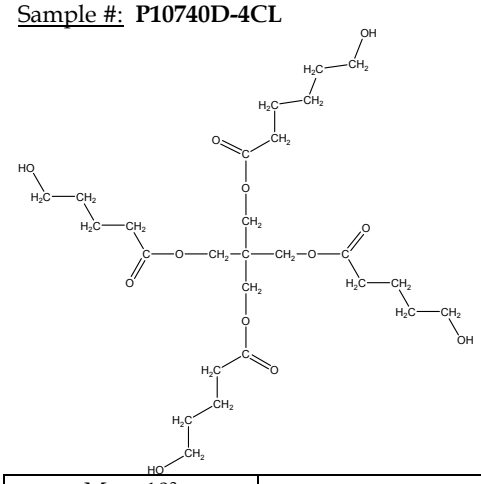
Sample Name:

Four arm Poly(ε-caprolactone) bearing core of pentaerythritol

Sample #: **P10740D-4CL**



Mn x 10^3 (branch)	PDI
0.770 (Mn total 3.1)	1.2
Solubility in DMF, DMSO and in Acetone	

Core: 136

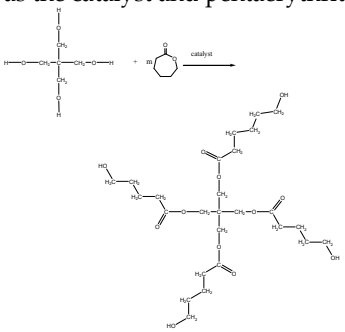
4CL: 3000

Total with Core: 3136

Mn of Branch: 770

Synthesis Procedure:

The polymer was prepared by ring opening polymerization of caprolacton using Tin octoate as the catalyst and pentaerythritol Mn of 136.



Characterization:

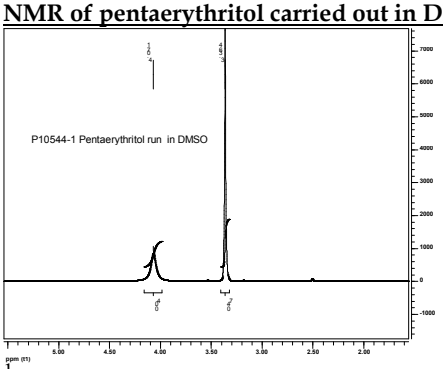
The Mn of the polymer is calculated from 1H-NMR spectroscopy by comparing the peak area of the core protons at about 3.6 ppm with the **ε**-caprolactone protons at about 4.1 ppm. Polydispersity is determined by size exclusion chromatography (SEC): Varian liquid chromatograph equipped with UV and refractive detector. SEC columns from Supelco were used with THF containing 2 vol% (Et)3N as the eluent.

Purification of the obtained polymer:

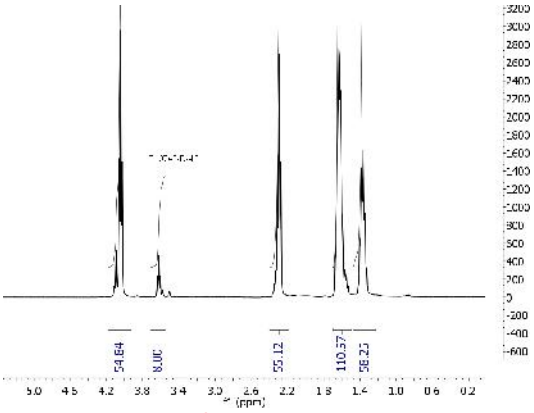
Purification of the obtained polymer was carried out rigorously as discussed below to ensure the removal of the catalyst and traces amount of unreacted 4–hydroxy core based on pentaerythritol.

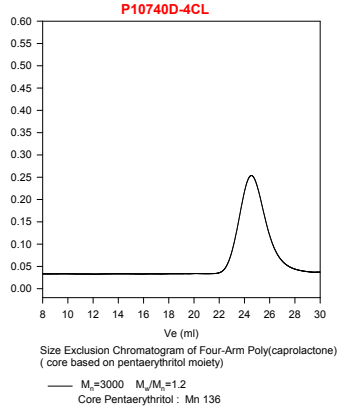
1. Dissolved the polymer dichloromethane, solution filtered and than passed through a column packed with basic Al_2O_3 .
2. Solution concentrated on rota-evaporator
3. Solution precipitated in cold diethyl ether.
4. Dried under vacuum for 48h at 150 °C to remove any low molecular weights oligomeric species

NMR of pentaerythritol carried out in DMSO:



^{1}H NMR of the Product:





Size Exclusion Chromatogram of Four-Arm Poly(caprolactone) (core based on pentaerythritol moiety)

M_n=3000 M_w/M_n=1.2

Core Pentaerythritol : Mn 136