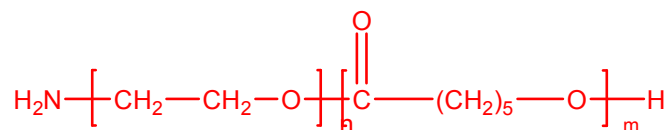


Sample Name:

**Amino end functionalized Poly(ethylene oxide -b- ε-caprolactone)**

Sample #: **P4543B- NH2EGCL**

**Structure:**

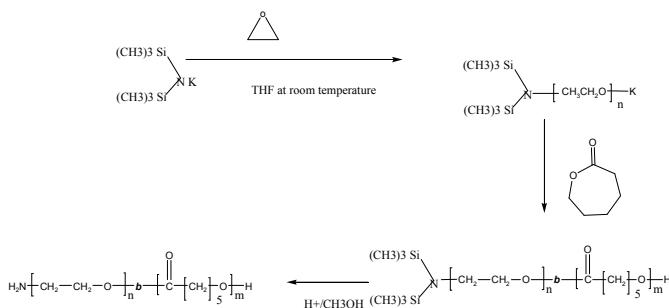


**Composition:**

Mn x 10 <sup>3</sup> NH2PEG-b-PCL	PDI
5.5-50.0	1.7

**Synthesis Procedure:**

NH2 end functionalized Poly(ethylene oxide -b- ε-caprolactone) is prepared by living anionic polymerization of ethylene oxide using NH2 protected initiator. The scheme of the reaction is illustrated below:



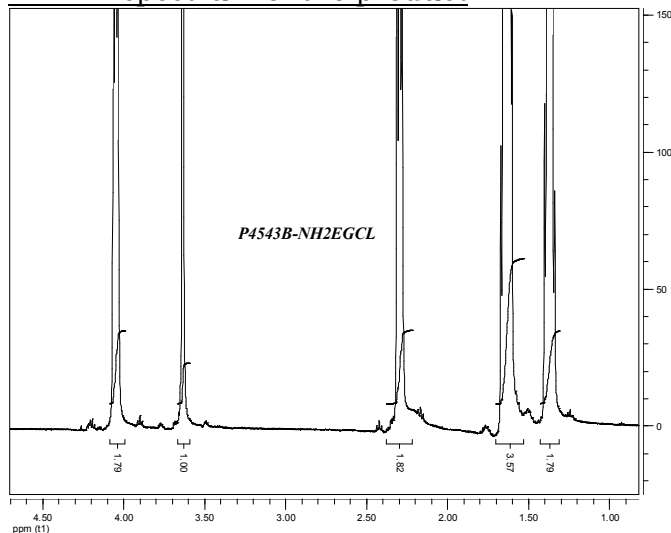
**Characterization:**

An aliquot of the anionic poly(ethylene oxide) block was terminated before addition of caprolactone and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The polymer obtained at each step and the final block copolymer composition was calculated from <sup>1</sup>H-NMR spectroscopy by comparing the peak area of the ethylene oxide protons at about 3.6 ppm with the ε-caprolactone protons at about 4.1 ppm.

**Solubility:**

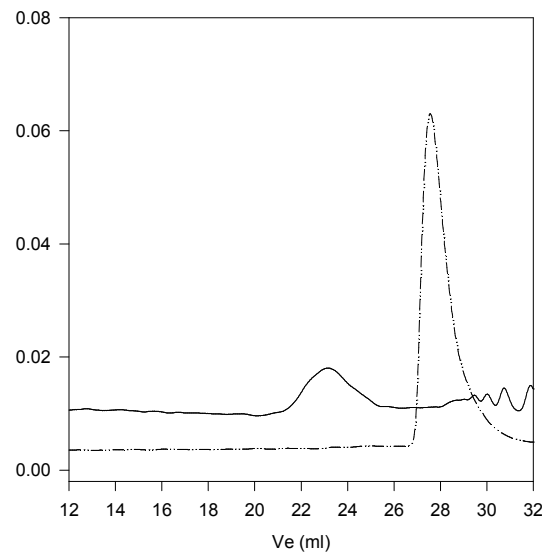
NH2 end functionalized Poly(ethylene oxide -b- ε-caprolactone) is soluble in  $\text{CHCl}_3$ , THF, and precipitated out from cold ethanol, diethyl ether.

HNMR spectrum of the product



**SEC of the block copolymer:**

**P4543B- NH2EGCL**



Size exclusion chromatography:

..... Amino protected Poly(ethylene glycol)  $M_n=5500$ ,  $M_w=6400$ ,  $PI=1.15$

—— Block Copolymer NH2-PEG-b-CL (5500)-b-PCL(50000),  $PI=1.7$

## Thermal analysis of the sample#4543B

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature ( $T_g$ ).

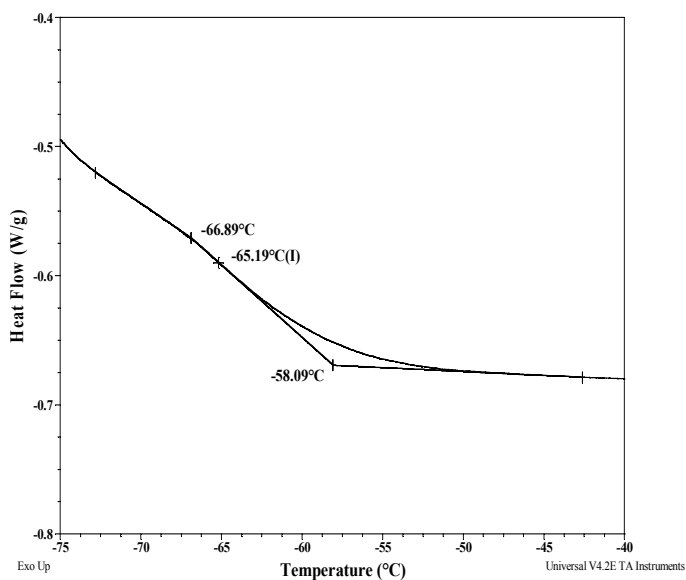
### Melting and crystallization curve for the sample

The melting temperature ( $T_m$ ) was taken as the maximum of the endothermic peak where as the crystallization temperature ( $T_c$ ) was considered as the minimum of the exothermic peak.

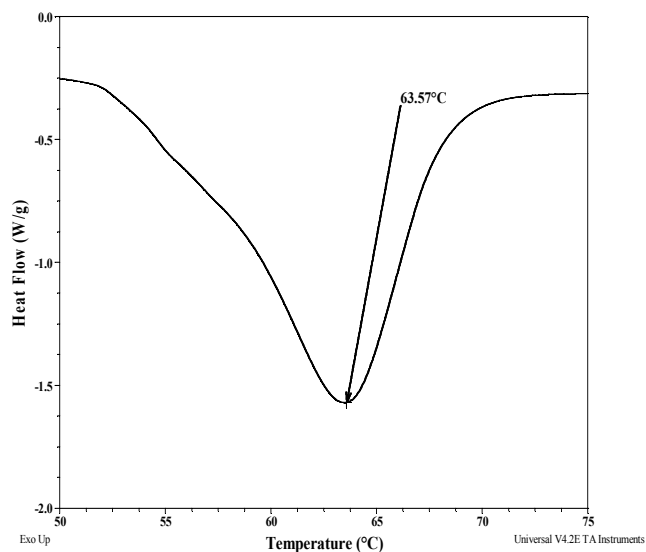
### Thermal analysis results at a glance

Sample	$T_m$ (°C)	$T_c$ (°C)	$T_g$ (°C)
EO (5k)	61	29	-65
e-CL (8k)	55	29	-69
<b>Sample</b>	<b>64</b>	<b>27</b>	<b>-65</b>

### Thermogram for the polymer:



### Melting curve for the polymer:



### Crystallization curve for the sample:

