

Sample Name: α pyran ω - mesylate end functionalized

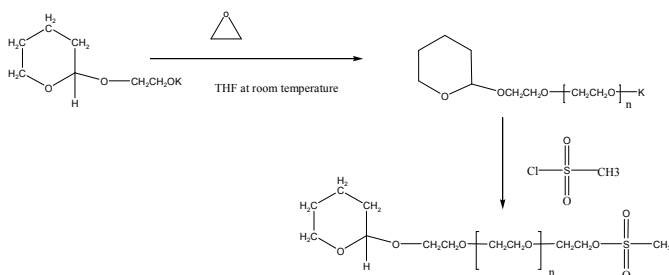
Poly(ethylene glycol)

Sample #: P4558A- EGPYMS**Structure:****Composition:**

Mn x 10 ³	PDI
5.8	1.10

Synthesis Procedure:

Mesylate functionalized poly(ethylene oxide) is prepared by living anionic polymerization of ethylene oxide. The scheme of the reaction is illustrated below:

**Characterization:**

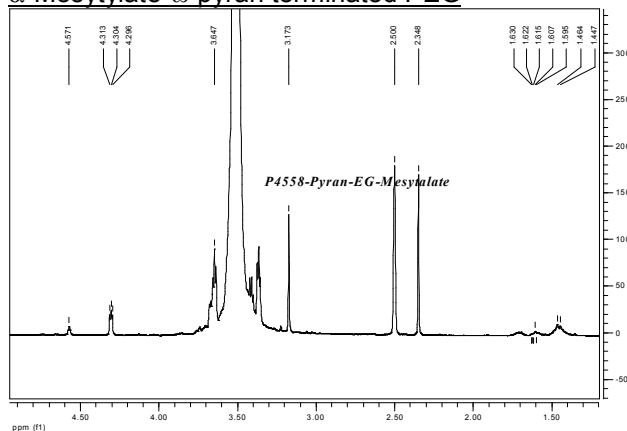
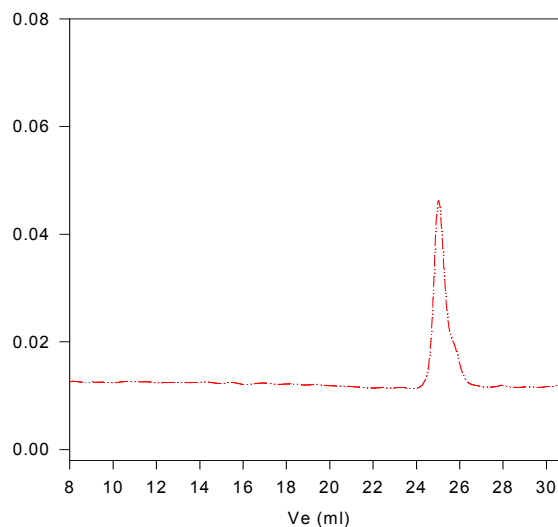
An aliquot of the poly(ethylene oxide) before addition of mesyl chloride was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The polymer obtained at each step and the final block copolymer composition was calculated from ¹H-NMR spectroscopy.

FTIR:

N3 characteristics appear at 2101 Cm⁻¹.

Solubility:

N3 end functionalized Poly(ethylene oxide) is soluble in CHCl₃, THF, and precipitated out from cold ethanol, diethyl ether.

¹H-NMR Spectrum of the polymer and the final block copolymer at different stages: **α -Mesylylate- ω -pyran terminated PEG****SEC of the polymer before terminating with mesyl chloride (methane sulfonyl chloride):****P4558- N3EG**

Size exclusion chromatography before adding mesyl chloride
 --- Mono azo functionalized Poly(ethylene glycol) ,
 M_n=5800, M_w=6400, PI=1.10

Thermal analysis of the P4558A-EGPyMs

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).

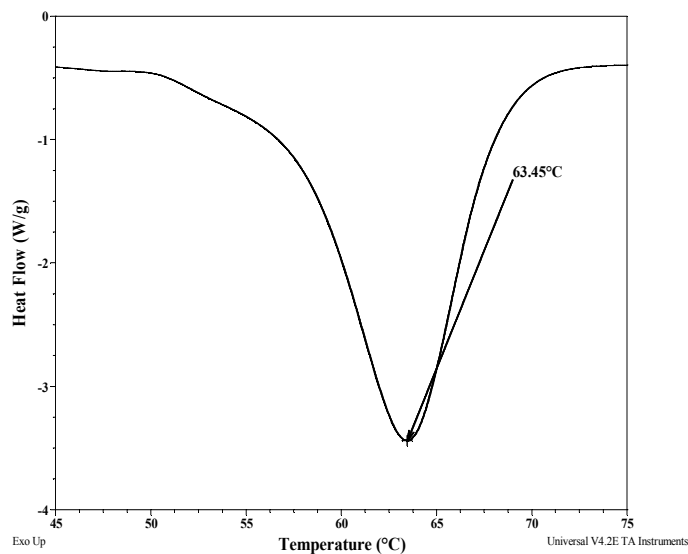
Melting and crystallization curve for the sample

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.

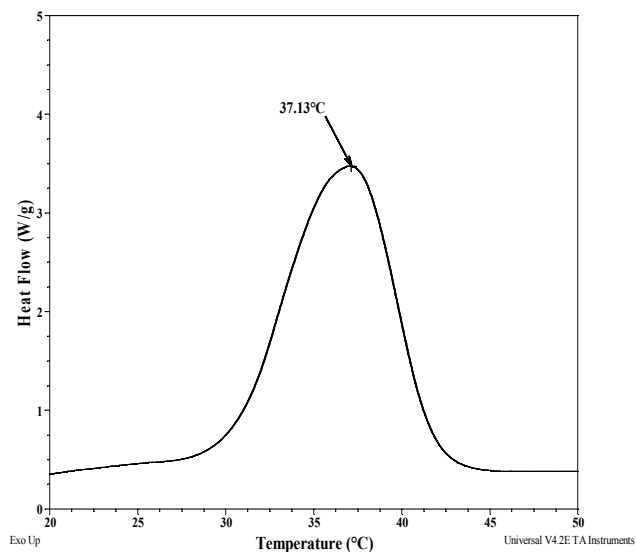
Thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
EGPyMS	63	37	-45

Melting curve for the polymer:



Crystallization curve for the polymer:



Thermogram for the PEO block

