Sample Name:
Amino end functionalized Poly(ethylene oxide -b- methacrylic acid)

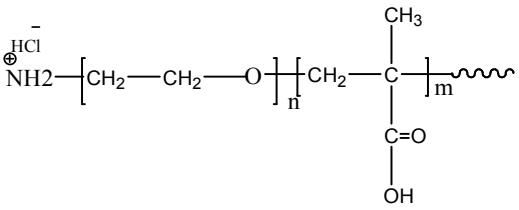
Sample #: **P5536A- NH2EOMAA**

Structure:

Composition:

Mn × 10^3 NH2PEG-b-PMAA	PDI
5.0-b-0.3	1.08

Synthesis Procedure:
NH2 end functionalized Poly(ethylene oxide -b- methacrylic acid) is prepared by living anionic polymerization of ethylene oxide and tert. Butyl methacrylate followed by hydrolysis of tert.butyl ester to methacrylic acid form.

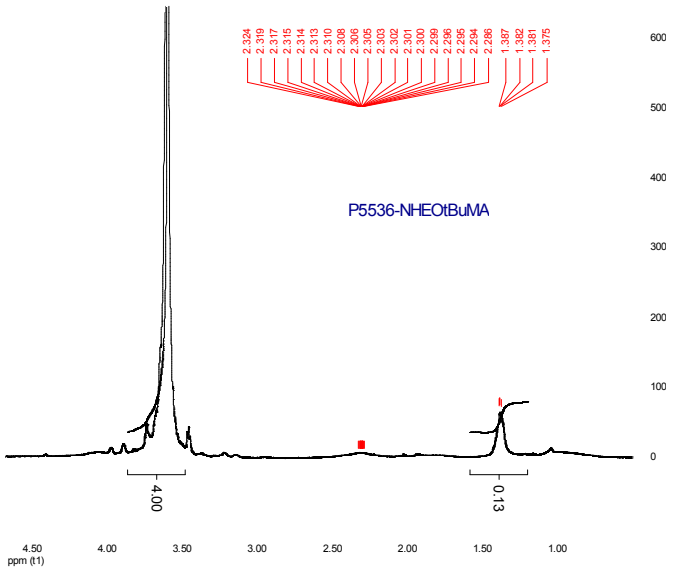


Characterization:
An aliquot of the anionic poly(ethylene oxide) block was terminated before addition of tert.butyl methacrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The polymer obtained at each step and the final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the ethylene oxide protons at about about 3.6 ppm with the one proton at about 1.2ppm.

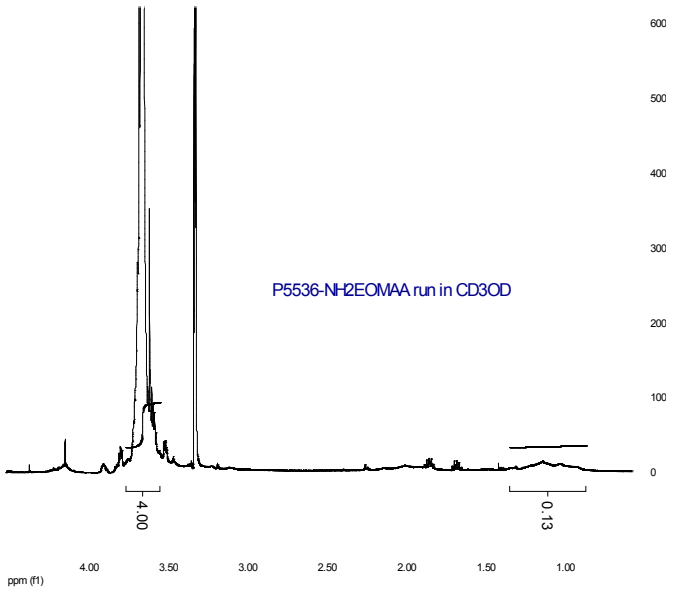
FTIR:
The degree of hydrolysis of tert,butyl ester to methacrylic acid was determined from the FTIR by disappearance of characteristic absorbance of tert.butyl ester at 1265 cm-1 and broadening of ester C=O absorbance.

Solubility:
NH2 end functionalized Poly(ethylene oxide –b-methacrylic acid) is soluble in methanol, ethanol and **in water cloudy solution to a clear solution –depending on the temperature of the solution, due to less hydrophilic characteristics of methacrylic acid block**. It is also soluble in THF.

^{1}H-NMR Spectrum of the block copolymer NH2EOtBuMA



^{H}NMR of NH2 EG-MAA in Methanol



Thermal analysis of the P5536A- NH2EOMAA

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).

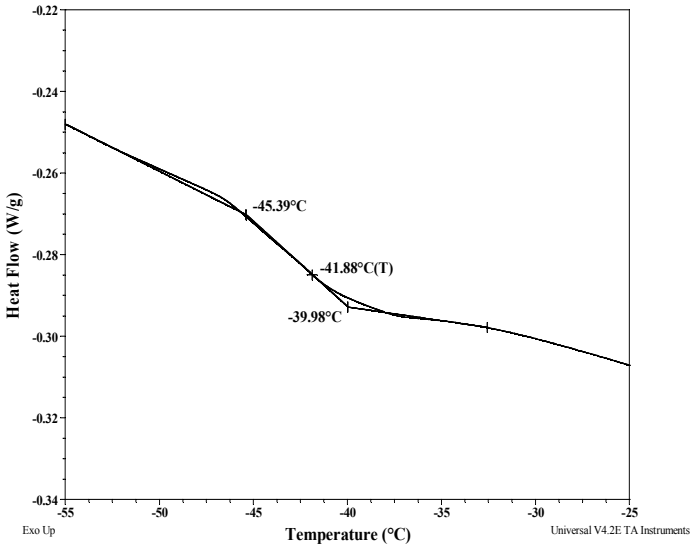
Melting and crystallization curve for the sample

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.

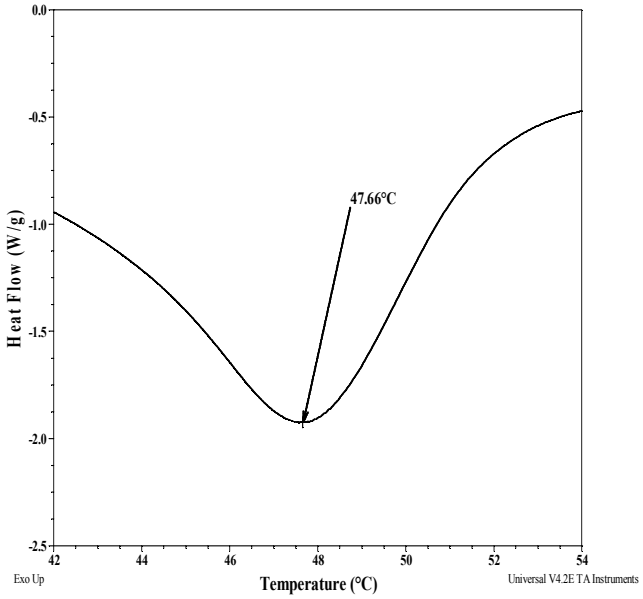
Thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
EO Block	48	24	-42
AA block	-	-	Not found

Thermogram for the EO block:



Melting curve for the polymer:



Crystallization curve for the polymer: