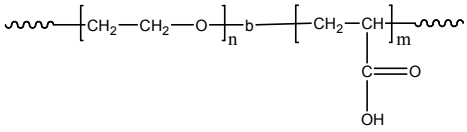
Sample Name:
Poly(ethylene oxide -b- acrylic acid)

Sample #: P11301A-EOAA

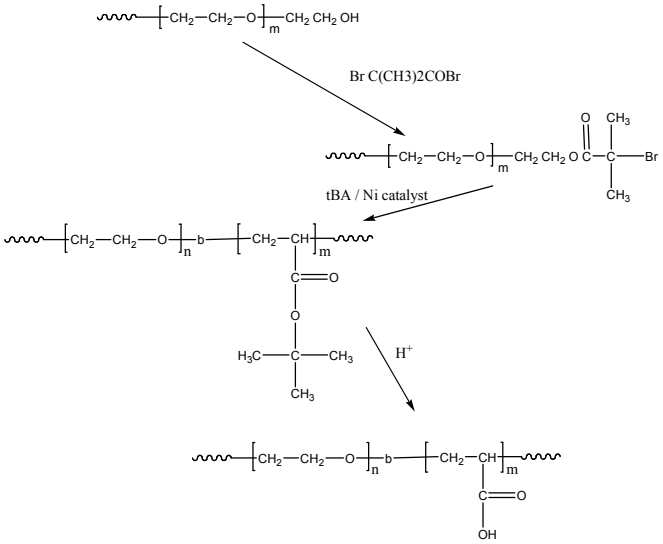
Structure:



Composition:

Mn × 10^3 PEO-b-PAA	PDI
6.0-b-1.6	1.26

Synthesis Procedure:
The polymer is prepared by the following scheme:



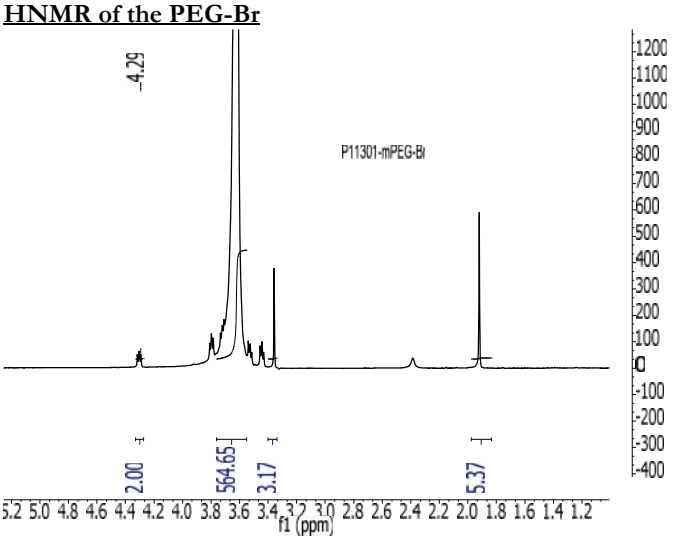
Characterization:

The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy of poly(ethylene oxide -b- t-butyl acrylate) by comparing the peak area of the t-butyl acrylate protons at 1.43 ppm with the peak area of the ethylene oxide protons at 3.6 ppm, then transferred to the EOAA form accordingly. Copolymer PDI is determined by SEC of poly(ethylene oxide -b- t-butyl acrylate).

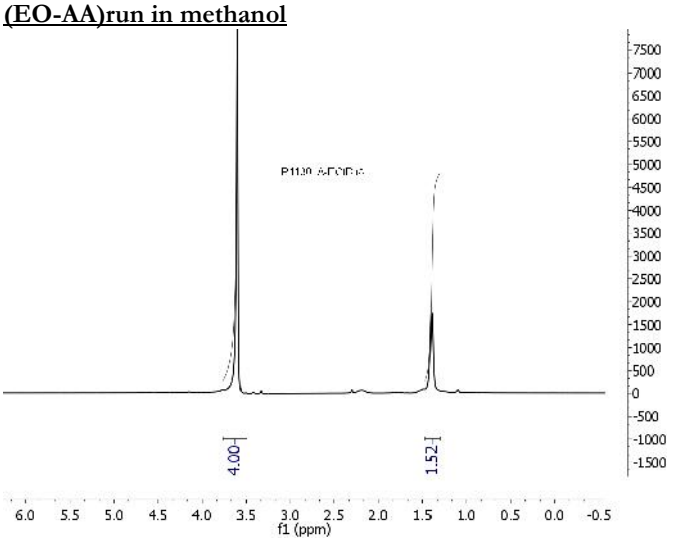
Solubility:

The polymer is soluble in methanol, THF and precipitated out from cold hexane or ether.

HNMR of the PEG-Br

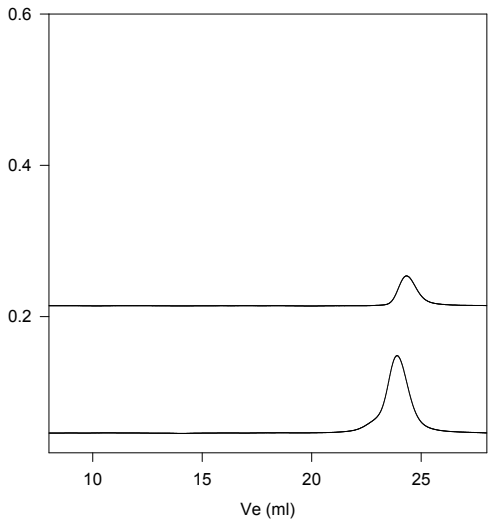


H-NMR Spectrum of the block copolymer (EO-AA)run in methanol



SEC of the block copolymer before hydrolysis:

P11301A-EOtBuA precursor for EOAA



Size exclusion chromatography of poly(ethylene oxide-t-butyl acrylate)
—— Poly(ethylene oxide), M_n=6,000, M_w=6500, PI=1.07
—— Block Copolymer PEO(6,000)-b-PtBA(3,000 from NMR), PI=1.26

After hydrolysis
Block Copolymer PEO(6,000)-b-PAA(1,600 from NMR), PI=1.26

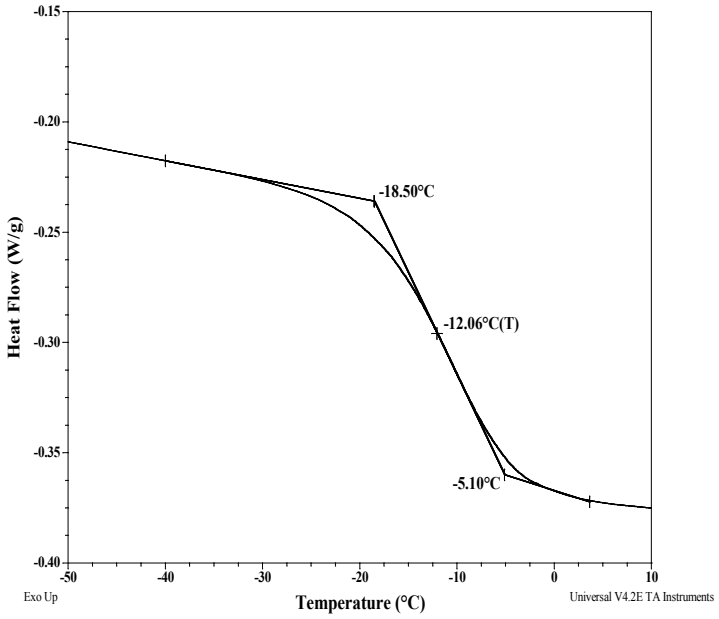
Thermal analysis of the P11301A- EOAA

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.

Thermogram for the EO block



Typical thermal analysis results at a glance:

Sample	T_m (°C)	T_c (°C)	T_g (°C)
EO	-	-	-12
AA			85

Thermogram for AA block: