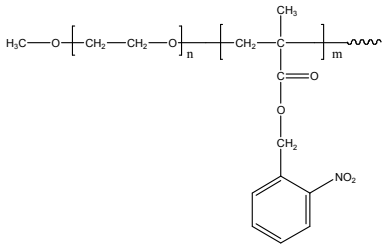
Sample Name: **Poly(ethylene oxide-b-Nitro benzyl methacrylate)**
NBMA= Nitro benzyl methacrylate
Sample #: **P13022F3-EONBMA**

Structure:

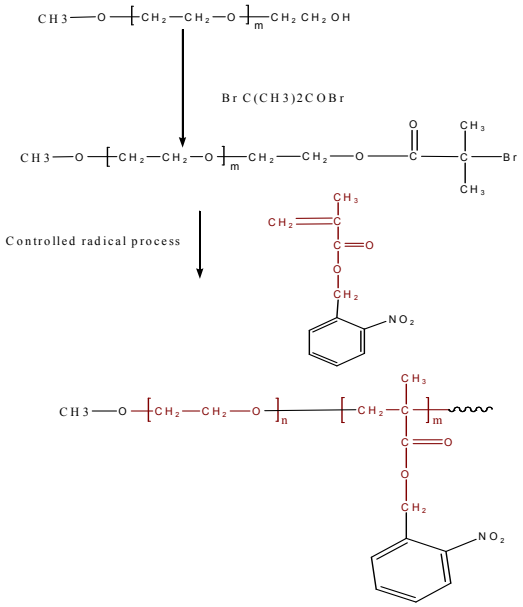


Composition:

Mn × 10^3 PEO-b-PNBMA	PDI
5.0-b- 235.0	6.0

Synthesis Procedure:

Poly(ethylene oxide-b-NBMA) is prepared by ATRP using bromo-terminated poly(ethylene glycol) as the macro-initiator. The scheme of the reaction is illustrated below:



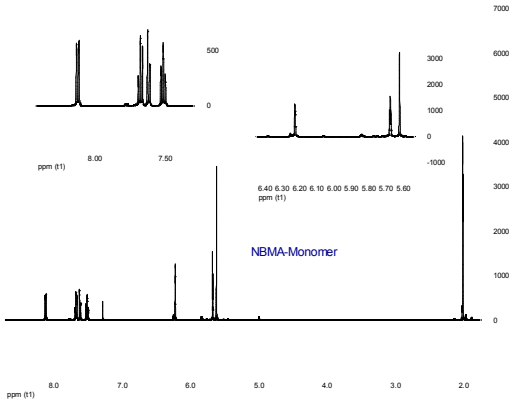
Characterization:

PEG-Br and final block copolymer were analyzed by size exclusion chromatography (SEC) to obtain the molecular weight of PEG and polydispersity index (PDI) for both PEG and block copolymer. The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the ethylene oxide protons at about 3.6 ppm with the benzyl protons at about 5.3 ppm. The molecular weights calculated was found higher than the values obtained by SEC using PMMA as reference material.

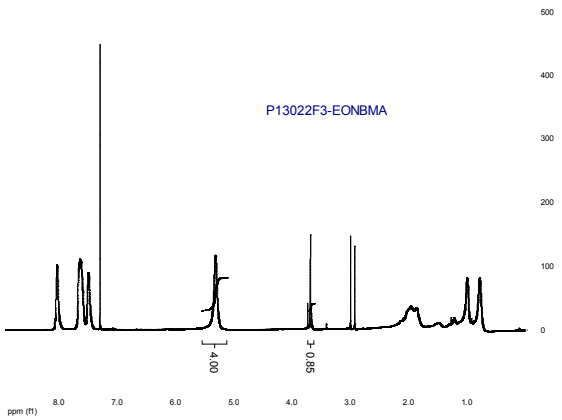
Solubility:

Poly(ethylene oxide-b-NBMA) is soluble in THF, acetone, and chloroform and it precipitates out in hexane or methanol.

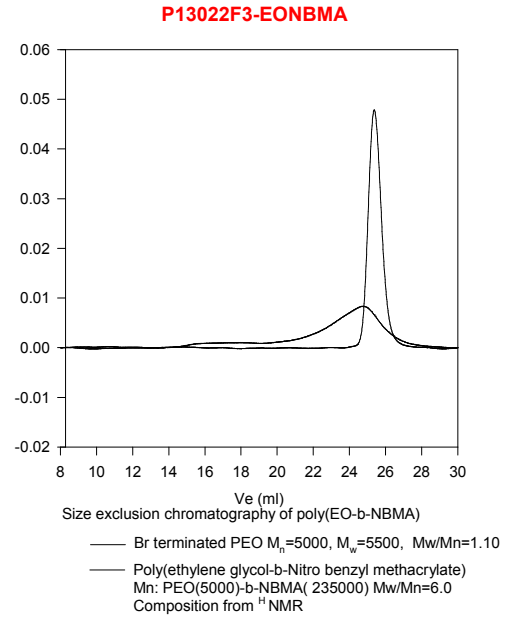
^{1}H-NMR Spectrum of the monomer (NBMA):



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



SEC of the block copolymer:



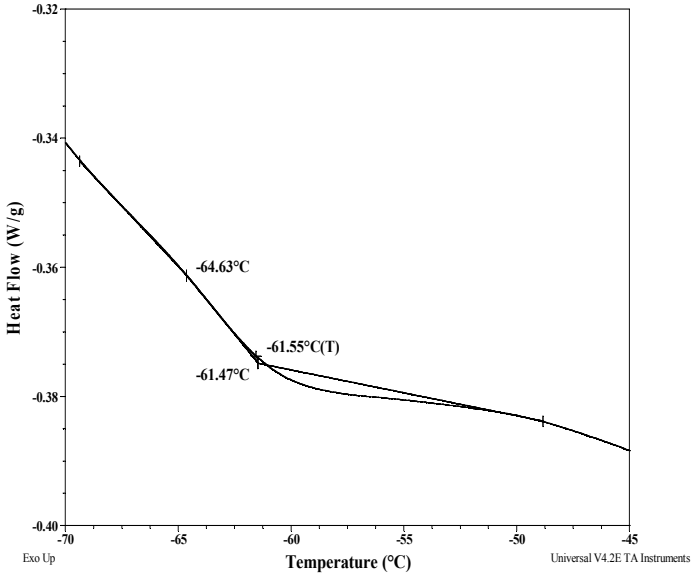
Thermal analysis of the P13022-F3- EONBMA

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 PEO block:



Thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
EO (homopolymer)	38	26	-65
NBMA (homopolymer)	34	20	-
EONBMA	33	-	-62

Melting curve for NBMA block: