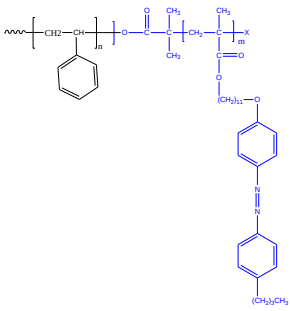
Sample Name: **Poly(Styrene-b-AzoMA)**
AzoMA=11-[4-(4-butylphenylazo)phenoxy]-undecyl methacrylate)

Sample #: **P5653C-SAZoMA**

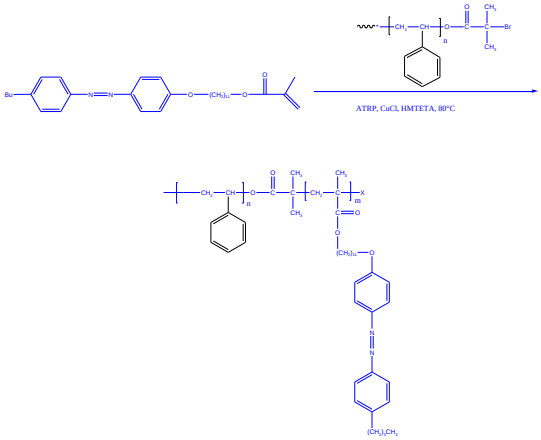
Structure:



Composition:

Mn x 10^3 PS-b-PAzoMA	PDI
6.0-b-24.0	1.9
In D_p of each units: 58-b-48	

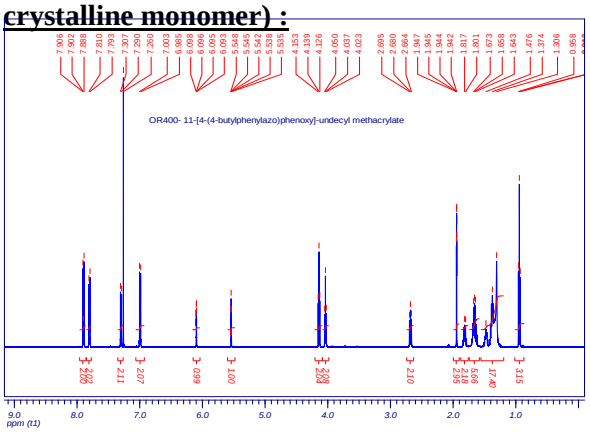
Synthesis Procedure:
Poly(styrene-b-AzoMA) is prepared by ATRP using bromo-terminated poly(styrene) as the macro-initiator. The scheme of the reaction is illustrated below:



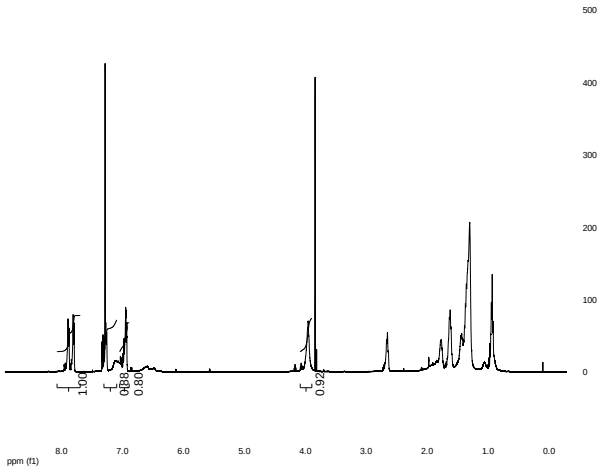
Characterization:
PS-Br and final block copolymer were analyzed by size exclusion chromatography (SEC) to obtain the molecular weight of PEG and polydispersity index (PDI) for both PEG and block copolymer. The final block copolymer composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the styrene protons (by subtracting the protons from AzoMA units) at about about 6.2 -7.2 ppm with the methylene protons adjacent to phenoxyl ring and ester protons at about 4.1 ppm.

Solubility:
Poly(styrene-b-AzoMA) is soluble in THF, acetone, and chloroform and it precipitates out in hexane or cold methanol.

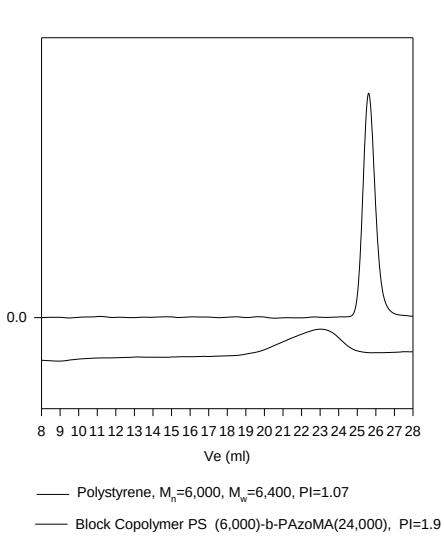
^{1}H-NMR Spectrum of the Azo-MA (Liquid crystalline monomer) :



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



SEC of the block copolymer:



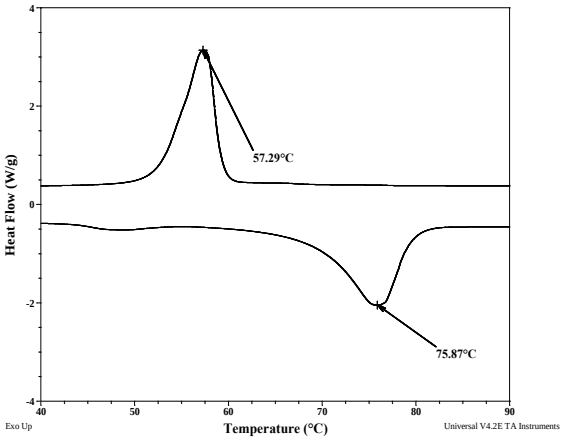
Thermal analysis for sample#5653C-SAzoMA

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10^{o}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.

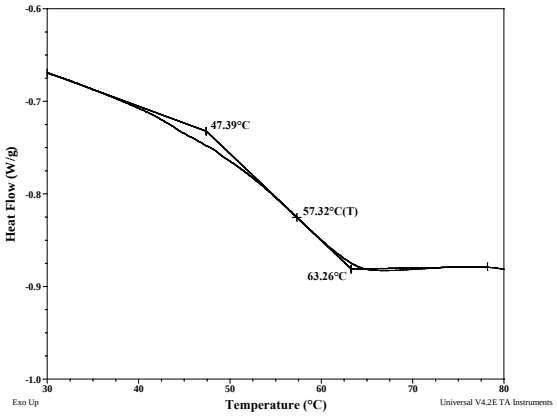
Thermograms for AzoMA monomer



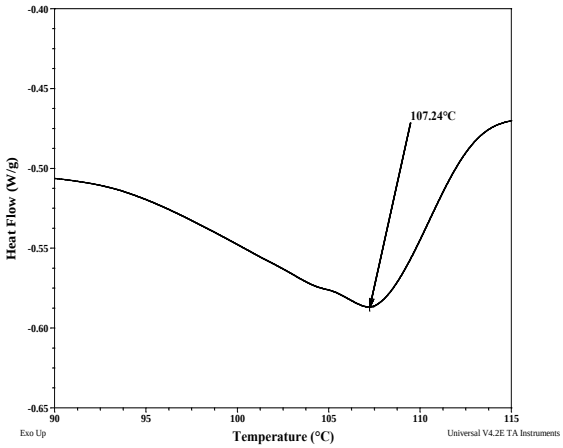
Thermal analysis results at a glance

Sample	T_m (^{o}C)	T_c (^{o}C)	T_g (^{o}C)
AzoMA monomer	76	57	
PAzoMA:	107	102	-
PS block:	-	-	57

Thermogram for PS block:



Melting curve for AzoMA block:



Crystallization curve for AzoMA block: