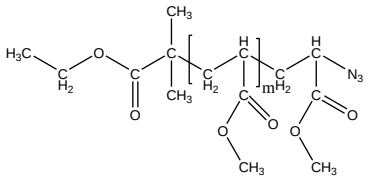
Sample Name: **α-azido end functionalized Poly (methyl acrylate)**

Sample #: **P41614-MA-N3**

Structure:



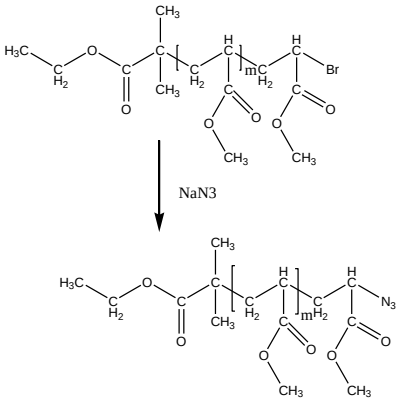
Composition:

Mn x 10^3	PDI
2.6	1.13

Synthesis Procedure:

The Br end functionalized PMA was prepared by ATRP polymerization process followed by reaction Br end PMA with NaN3 in DMF.

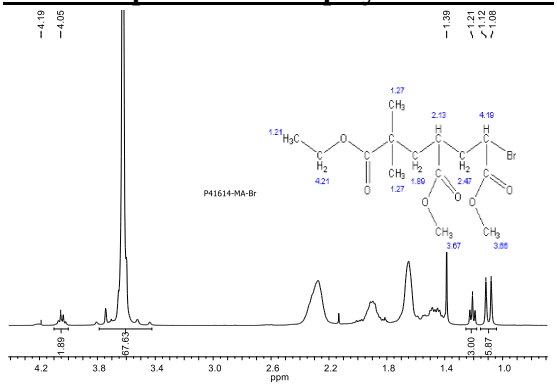
The following reaction scheme shows how the product was prepared:



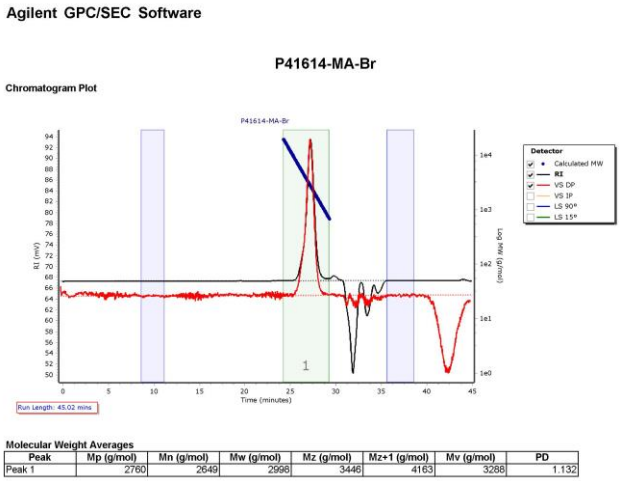
Characterization:

The product was characterized by size exclusion chromatography (SEC), ^{1}H NMR and FTIR.

^{1}H NMR spectrum of the polymer: PMA-Br



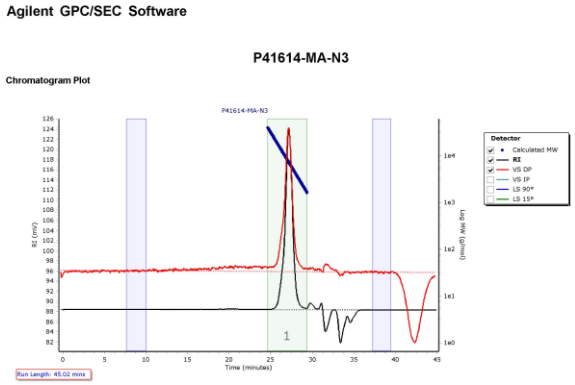
SEC elugram of the PMA-Br:



Molecular Weight Averages

Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz+1 (g/mol)	Mv (g/mol)	PD
Peak 1	2760	2649	2998	3446	4163	3288	1.132

After converting Br to N3 end group the elution count of the obtain polymer in their SEC changes to lower elution count:



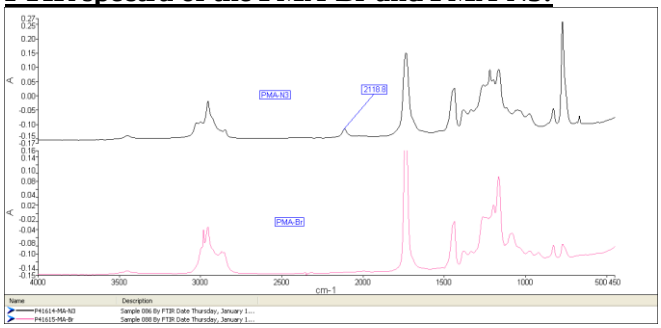
Molecular Weight Averages

Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz+1 (g/mol)	Mv (g/mol)	PD
Peak 1	7217	6913	7821	8931	10480	8477	1.131

Processing Parameters

Method	Last modified by Polymer Source at 11:41:18 AM on October-24-18
Concentration Detector Used in Analysis	RI
Injection volume (µL)	100.00
Flow rate (mL/min)	1.00
Concentration options	Calculate Sample Concentration from Entered Sample Properties
Entered dn/dc (mL/g)	0.084
Entered Ext Coeff ([(mg/mL)-¹][cm-¹])	1.000
Calculated RI concentration (mg/mL)	1.092

FTIR spectra of the PMA-Br and PMA-N3:



FTIR Spectra:

Presence of Azide end groups were observed by FTIR (Cm-1): 2118(s) and compare with Carbonyl 1735 (s).

Calibration for FTIR:

Methyl 2- azidopropionate and Bromo end functionalized poly methyl acrylate were mixed in several ration in CHCl3 and FTIR were made in CHCl3 in a solution cell. The integration of the peak corresponding to the azide and carbonyl groups were compared. It gives you an approximate functionalization. The details are reported in our publication: Xing Fu. Zhong, S. K.Varshney, and A. Eisenberg

"Critical Micellization Length for Polystyrene-b-Na-Acrylate Block Ionomers" CA Vol 117, 26, 252280 Macromolecules 1992, 25, 7160-7167.