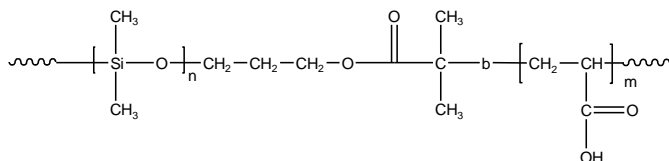


Sample Name: Poly(dimethyl siloxane -b- acrylic acid)

Sample #: P7183-DMSAA

Structure:

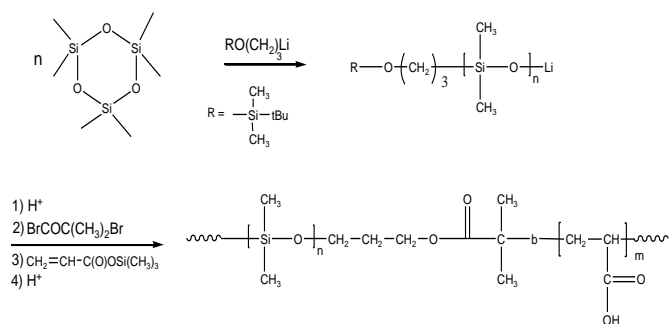


Composition:

Mn $\times 10^3$ PDMS-b-PAA	PDI
8-b-0.7	-----

Synthesis Procedure:

Poly(dimethyl siloxane -b- acrylic acid) is prepared by living anionic polymerization of hexamethyl cyclotrisiloxane followed by controlled radical polymerization of trimethyl siloxyacrylate. The reaction scheme is shown below:

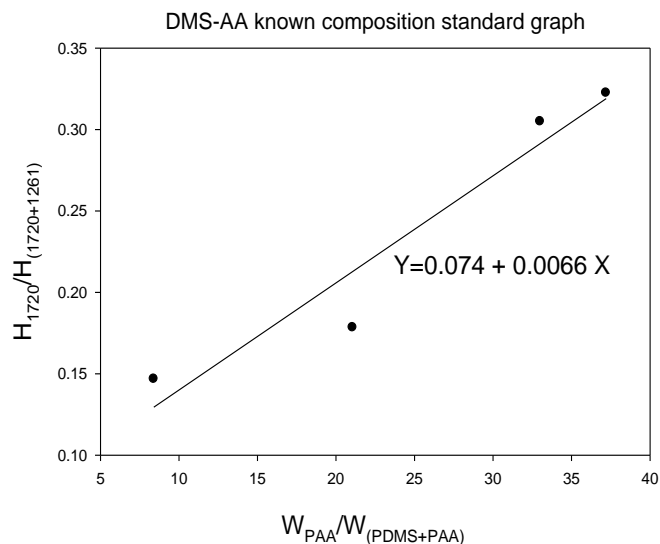


Characterization:

An aliquot of the Poly(dimethyl siloxane) block was terminated before controlled radical polymerization of the trimethyl siloxyacrylate block and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from $^1\text{H-NMR}$ spectroscopy by comparing the peak area of the siloxane protons at about 0 ppm with the peak area of the acrylic acid protons at about 1-2.5 ppm. The composition is also calculated according to FTIR showed as followed graph. The results from NMR and FTIR are compatible. The final block copolymer can not be eluted in GPC using THF as eluent. No GPC result can be showed.

Note: The calculation of the composition bases on the FTIR standard fit line obtained from polymers that have known composition.

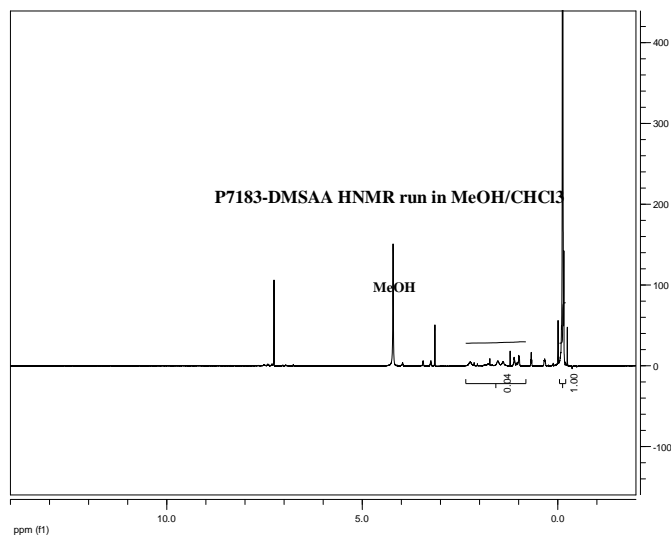
FTIR standard line for composition calculation:



Solubility:

Poly(dimethyl siloxane -b- acrylic acid) is soluble in THF, not soluble in MeOH, ether and hexane.

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



***Thermal analysis contd. in next page**

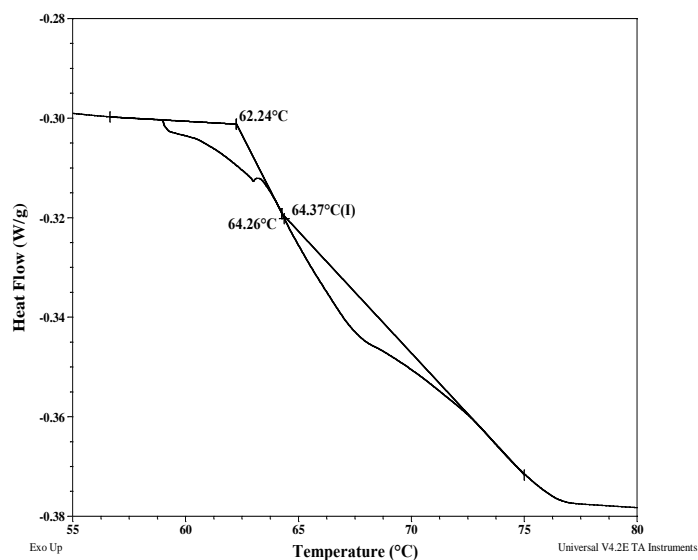
Thermal analysis of the sample# P7183-DMSMAA

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 MAA block:



Thermal analysis results at a glance

Sample	T_m (°C)	T_c (°C)	T_g (°C)
DMS	-45	Not observed	-127 (Lit)
AA	-	-	64

Melting curve for DMS block:

