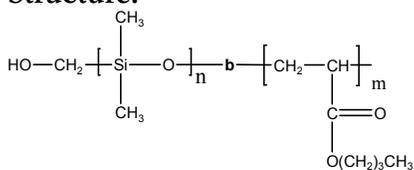


Sample Name: Poly(dimethyl siloxane-b-n-butyl acrylate)

Sample #: P2587-DMSnBuA

Structure:

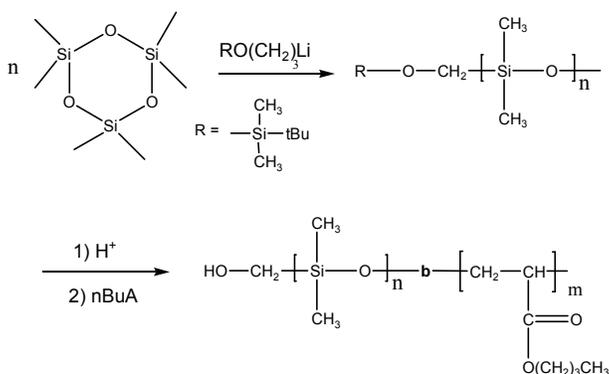


Composition:

Mn x 10 ³ DMS-b-nBuA	Mw/Mn (PDI)
8.0-b-11.0	1.10
T _g for nBuA: -51°C	T _m for DMS block: -39°C T _g : -127°C (Lit.)

Synthesis Procedure:

Poly(dimethyl siloxane-b-n-butyl acrylate) is prepared by living anionic polymerization of hexamethyl cyclotrisiloxane followed by free radical polymerization of n-butyl acrylate. The reaction scheme is shown below:



Characterization:

An aliquot of the anionic poly(dimethyl siloxane) block was terminated before addition of n-butyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy by comparing the peak area of the dimethyl siloxane protons near 0 ppm with the n-butyl protons at about 3.9 ppm. Block copolymer PDI is determined by SEC.

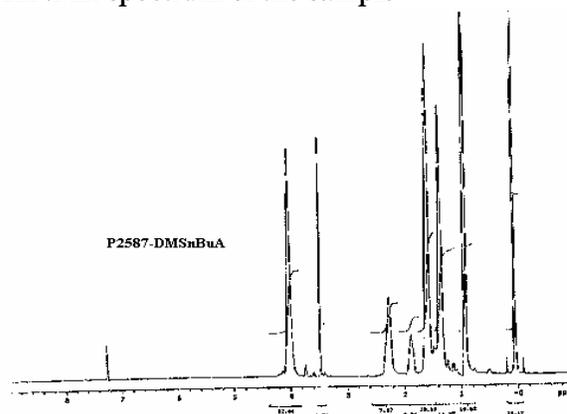
Thermal analysis:

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). The melting temperature (T_m) was taken as the maximum of the endothermic peak.

Solubility:

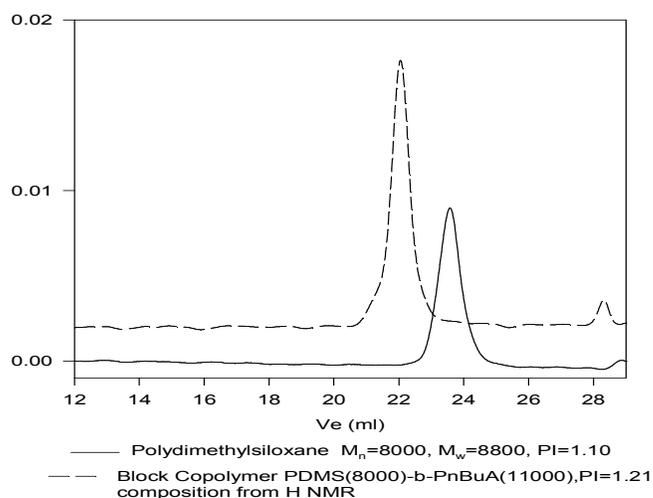
Poly(siloxane-b-n-butyl acrylate) is soluble in THF, CHCl₃, and DMF.

¹H-NMR spectrum of the sample

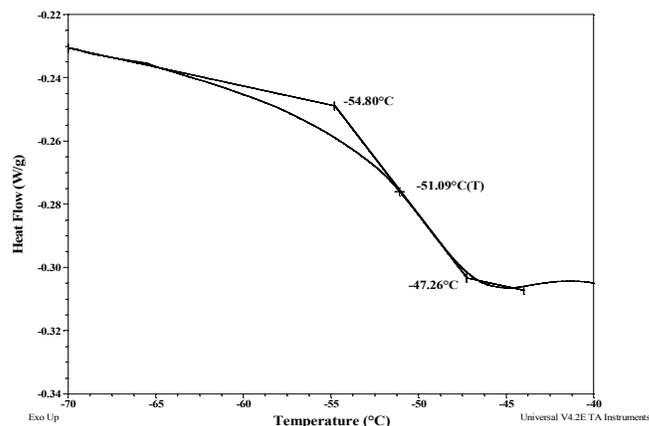


SEC profile of the block copolymer

P2587-DMSnBuA



DSC thermogram for nBuA block:



Melting curve for DMS block:

