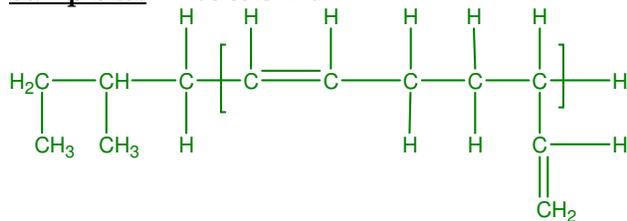


Sample Name: Polybutadiene
(rich in 1,4 microstructure)
(1,2=35% , 1,4 = 65%)

Sample #: P18747C-Bd

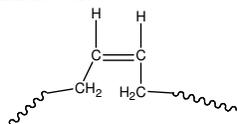


Composition:

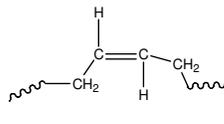
Mn x 10 ³	PDI
170.0	1.12
1,2 addition : 1,4 addition	35:65
Cis 1,4 and trans 1,4	24:76

Synthesis Procedure:

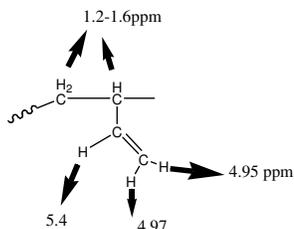
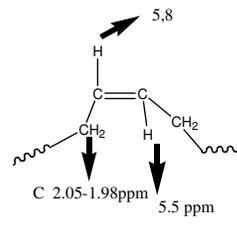
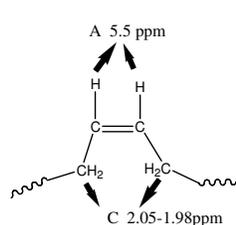
Polybutadiene (1,2-rich) is obtained by living anionic polymerization in cyclohexane with a known amount of THF using secBuLi as the initiator.



Cis 1,4 addition



Trans 1,4 addition



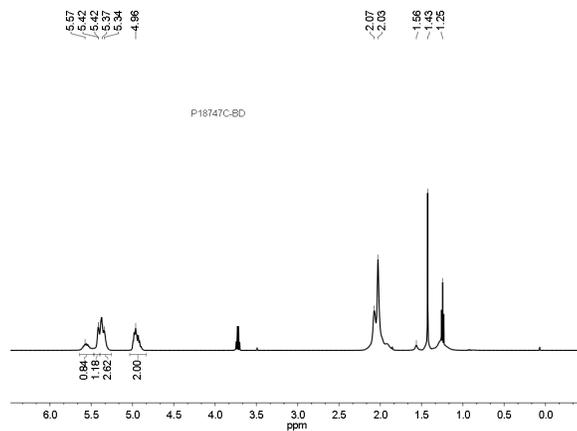
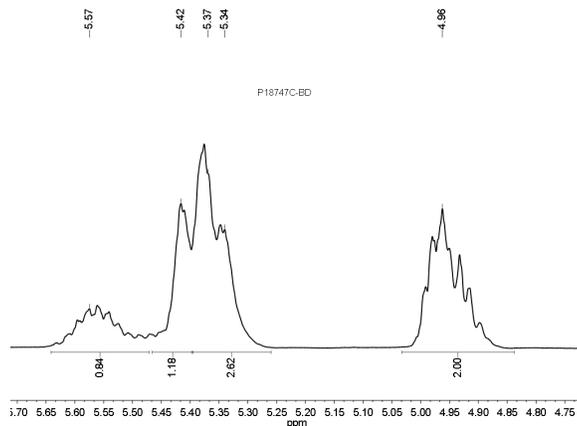
Characterization:

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co.

Polymer microstructure can be confirmed by ¹H-NMR where the spectrum of 1,2-polybutadiene

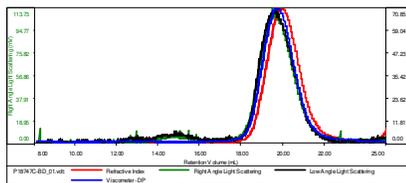
contains of 1 vinylic proton signal at 5.4 ppm and 2 vinylic protons at 5.0 ppm but the spectrum of 1,4-polybutadiene only contains vinylic signals at 5.4 ppm.

H NMR:



Sample ID: P18747C-Bd

Concentration (mg/mL)	13.3390
Sample dn/dc (mL/g)	0.1270
Method File	PS80K-June14-2014-0001.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	Mn	Mw	Mp	Mw/Mn	IV
P18747C-BD_01.vot	199,638	190,231	178,485	1.120	0.6967

