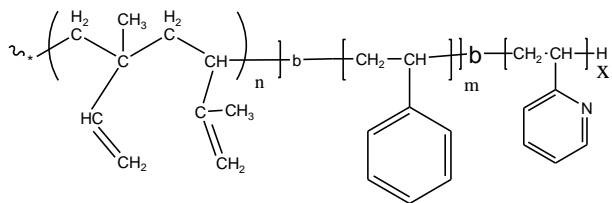


Sample Name:

Poly(Isoprene_(1,2 AND 3,4) rich -b-styrene-b-2vinyl pyridine)

Sample #: P11369-IPS2VP

Structure:

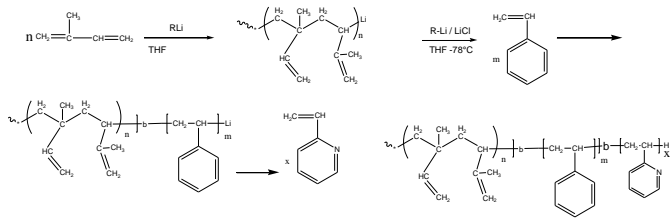


Composition:

Mn x 10 ³ IP-b-S-2VP	PDI
20.5-43.5-b-19.0	1.09

Synthesis Procedure:

By living anionic polymerization with sequence addition of isoprene (polymerization in polar solvent) than styrene, followed by addition of 2 vinyl pyridine (2VP). The scheme of the reaction is illustrated below:



Characterization:

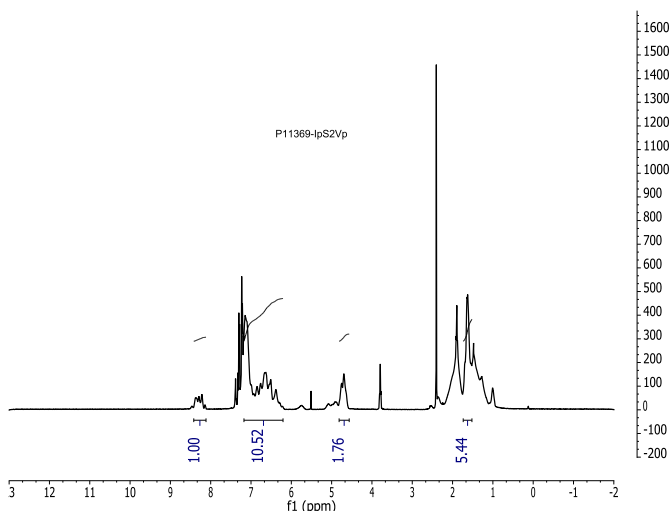
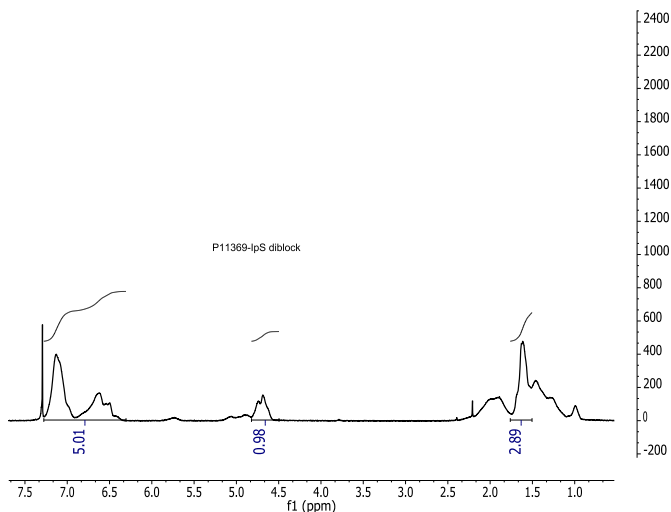
First Block: Size exclusion chromatography (SEC): Varian liquid chromatograph equipped with UV and refractive detector. SEC columns from Supelco were used with THF as the eluent. The columns were calibrated with monodisperse polystyrene. The molecular weights and the polydispersity index were calculated.

Second and Third Block: The chemical composition was extracted from proton NMR, which was recorded from Varian 500MHz instrument using CDCl₃ as solvent. The molecular weights of second and third block were calculated based on the molecular weight of other blocks and the chemical composition. The polydispersity index of block copolymer was obtained by SEC as described above.

Solubility:

Polymer is soluble in THF, toluene, and CHCl₃. The polymer readily precipitates from cold hexanes/ethanol mixture. .

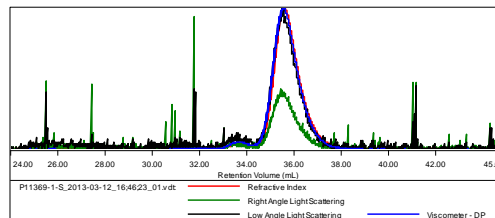
¹H-NMR Spectrum of the polymer:



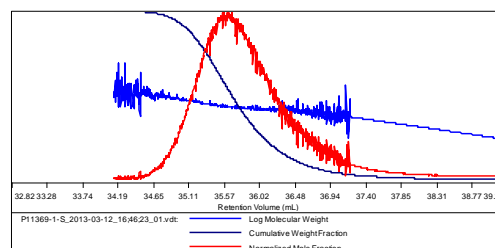
SEC for the polymer AT DIFFERENT STAGES OF POLYMERIZATION :

Sample ID: P11369-IP

Concentration (mg/mL)	7.4294
Sample dn/dc (mL/g)	0.1150
Method File	PS80K-Mar-2013-0002.vcm
Column Set	3x PL 1113-6300
System	System 1

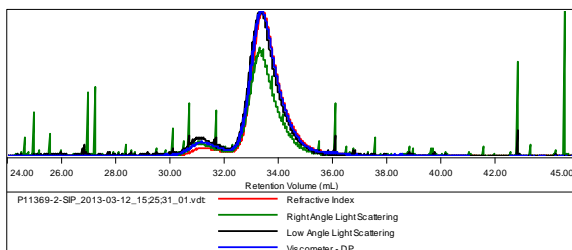


Sample	Mn	Mw	Mp	Mw/Mn	IV
P11369-1-S_2013-03-12_16:46:23_01	20,510	21,661	21,399	1.056	0.3449

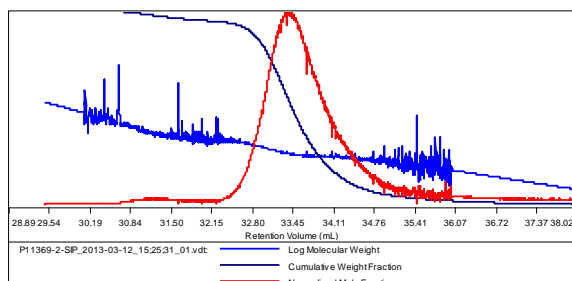


Sample ID: P11369-IPS

Concentration (mg/mL)	4.9259
Sample dn/dc (mL/g)	0.1550
Method File	PS80K-Mar-2013-0002.vcm
Column Set	3x PL 1113-6300
System	System 1

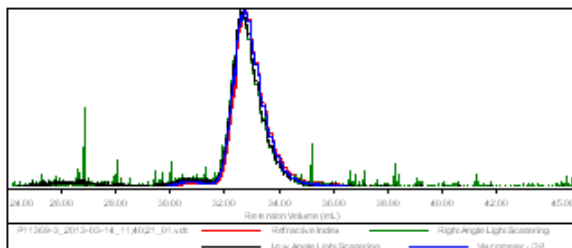


Sample	Mn	Mw	Mp	Mw/Mn	IV
P11369-2-SIP_2013-03-12_15:25:31_1	64,205	70,392	66,342	1.096	0.5778

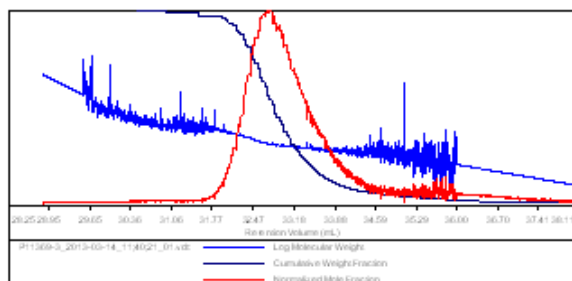


Sample ID: P11369IPS2VP

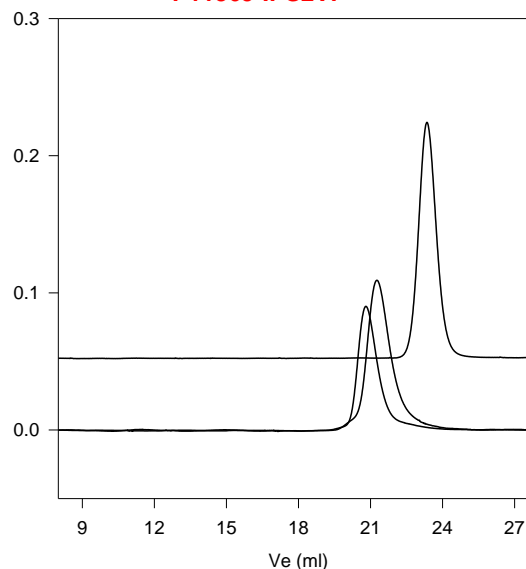
Concentration (mg/mL)	3.3252
Sample dn/dc (mL/g)	0.1630
Method File	PS80K-Mar-2013-0002.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn	Mw	Mp	Mw/Mn	IV
P11369-3_2013-03-14_11:40:21_01.vt	83,348	91,002	90,222	1.092	0.6146



P11369-IPS2VP



Size exclusion chromatography of poly(IP-b-S-b-2VP)

- PIP (rich in 1, 2 and 3,4 addition), $M_n=20,500$, $M_w=21,600$, $Mw/Mn=1.06$
 - Poly(IP-b-S): IP(20,500)-b-S(43,500) $Mw/Mn=1.09$
 - Triblock copolymer: P(IP)20.500-b-S(43,500)-b-2VP(19,000): $Mw/Mn=1.09$
- Composition from 1H NMR dn/dc in THF at 35°C: 0.163ml/g;

