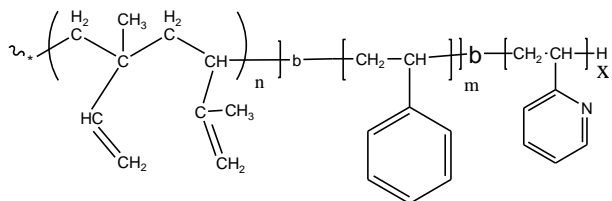


**Sample Name:**

**Poly(Isoprene<sub>(1,2 AND 3,4)</sub> rich -b-styrene-b-2-vinyl pyridine)**

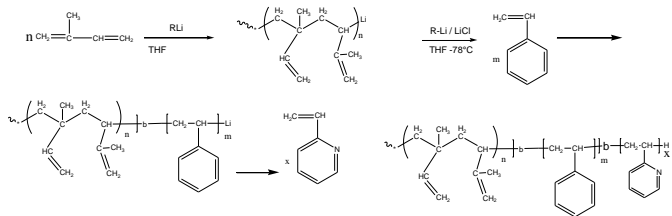
**Sample #: P18156-IPS2VP**

**Structure:****Composition:**

Mn x 10 <sup>3</sup> IP-b-S-2VP	PDI
33.3-b-14.0-b-38.0	1.55

**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:

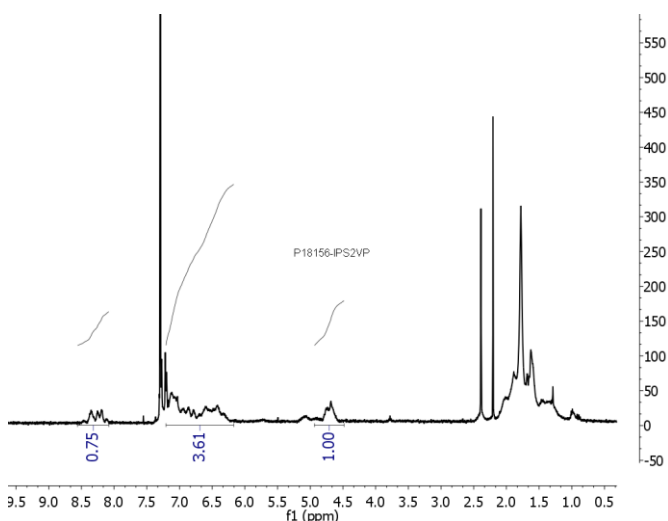
**Characterization:**

**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 CDCl<sub>3</sub> 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.

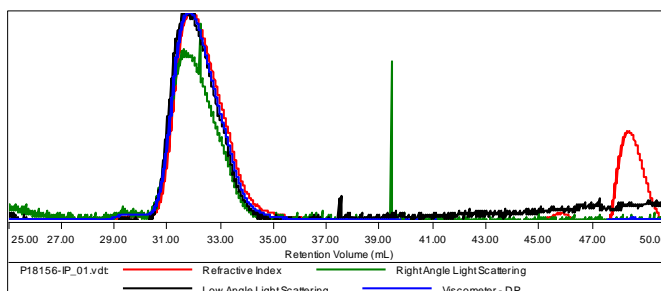
**Solubility:**

Polymer is soluble in THF, toluene, and CHCl<sub>3</sub>. The polymer readily precipitates from cold hexanes/ethanol mixture. .

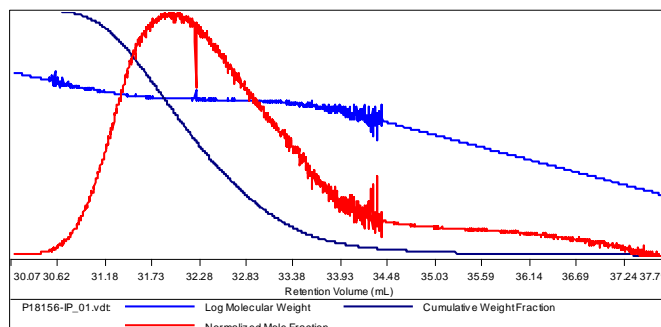
**<sup>1</sup>H-NMR Spectrum of the polymer:****SEC for the polymer AT DIFFERENT STAGES OF POLYMERIZATION:**

**Sample ID: P18156-Ip**

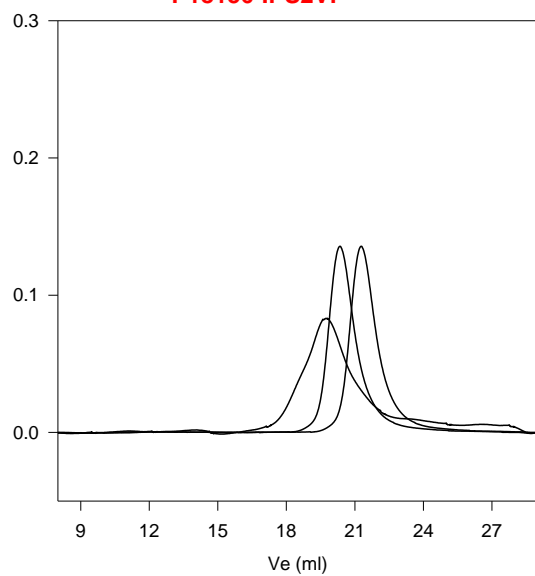
Concentration (mg/mL)	18.0387
Sample dn/dc (mL/g)	0.1250
Method File	PS80K-Aug30-2013-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn	Mw	Mp	Mw/Mn	IV
P18156-Ip_01.vdt	33,307	37,373	37,997	1.122	0.5739



# P18156-IPS2VP



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

—— PIP (rich in 1, 2 and 3,4 addition),  $M_n=33,300$ ,  $M_w=37,500$ ,  $M_w/M_n=1.12$

—— Poly(IP-b-S): IP(33,300)-b-S(14,000)  $M_w/M_n=1.09$

—— Triblock copolymer: P(IP)33,300-b-S(14,000)-b-2VP(38,000):  $M_w/M_n=1.55$

Composition from  $^1\text{H}$  NMR  $dn/dc$  in THF at 35°C: 0.175ml/g;