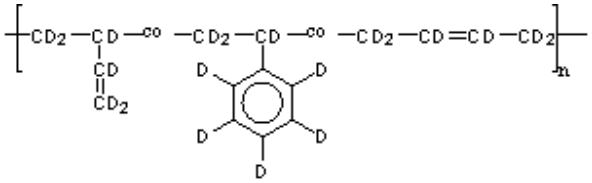
Sample Name: Random Copolymer Deuterated Poly (Styrene (d8)-*co*-Butadiene (d6))

Sample # P19284-dPSdPBdran

Structure:

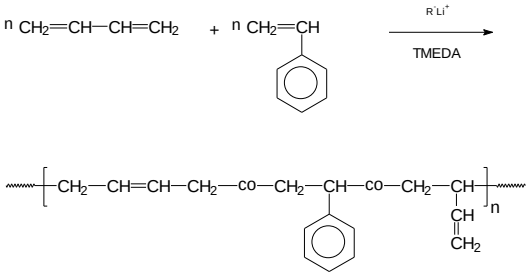


Composition: PdPS: 25% wt

Mn x 10^3 dPSdPBdran	PDI
39.0	1.2
Tg oC	-25 oC

Synthesis:

Poly (styrene)-co-butadiene copolymer was prepared by anionic copolymerization of deuterated styrene (S) and deuterated butadiene (Bd) in presence of promoter. The scheme of the reaction is presented below:



Characterization:

- *Molecular Weight:*

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 polybutadiene. The molecular weights and the polydispersity indice were calculated based on universal calibration.

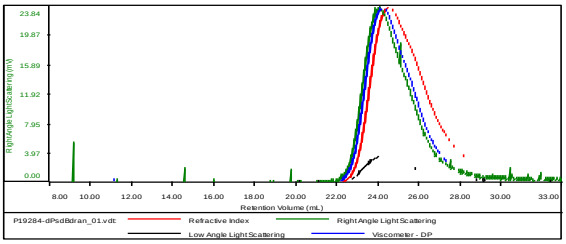
- *Chemical Composition:*

The chemical composition and microstructure of polybutadiene were examined from deuterium NMR, which was recorded from Varian 500MHz instrument using $CHCl_3$ as a solvent.

SEC elugram of d8PS-d6PBd random copolymer:

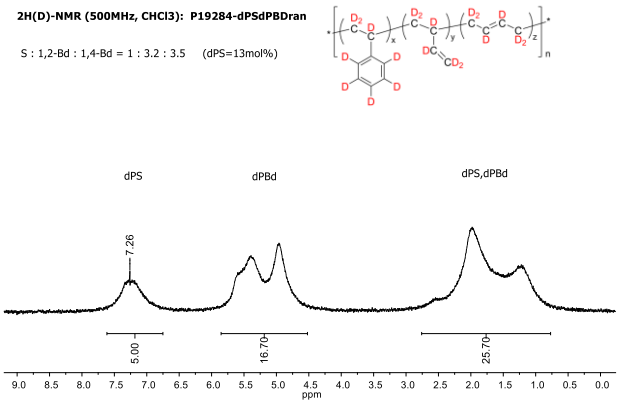
Sample ID:P19284-dPSdBdran

Concentration (mg/mL)	1.2636
Sample dn/dc (mL/g)	0.1300
Method File	PS80K-April29-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersi	Intrinsic Viscosity (dL/g)
P19284-dPsdBdran_01.vdt	38,942	47,332	51,076	1.215	1.7952

^{2}H NMR (500 MHz, $CHCl_3$) of d_8PS-d_6PBd:



DSC of d_8PS-d_6PBd random copolymer: