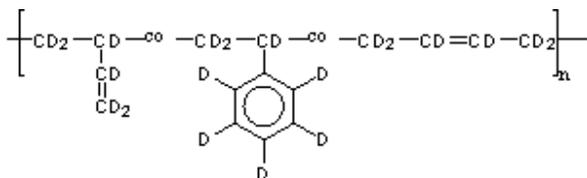


Sample Name: Random Copolymer
Deuterated Poly (Styrene (d8)-co-Butadiene (d6))
Sample # P19271-dPSdPBdran

Structure:

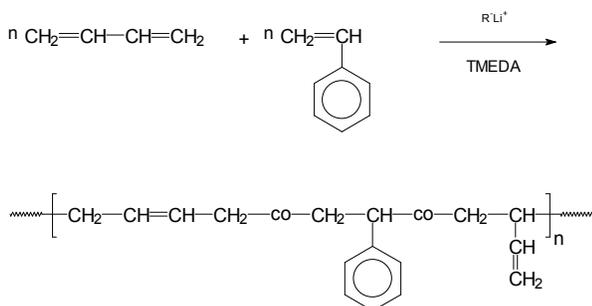


Composition: PdPS : 25% wt

| | |
|------------------------------------|--------|
| Mn x 10 ³ dPSdPBdran | PDI |
| 19.0 | 1.10 |
| 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 indices were calculated on the basis of universal calibration.

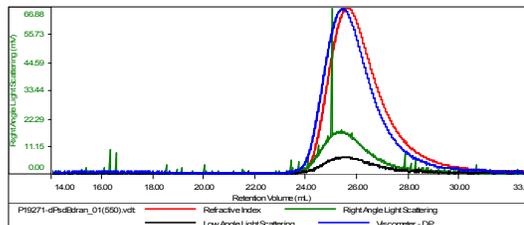
• *Chemical Composition:*

The chemical composition and microstructure of polybutadiene were examined from deuterium NMR, which was recorded from Varian 500MHz instrument using CHCl₃ as a solvent.

SEC elugram of d8PS-d6PBd random copolymer:

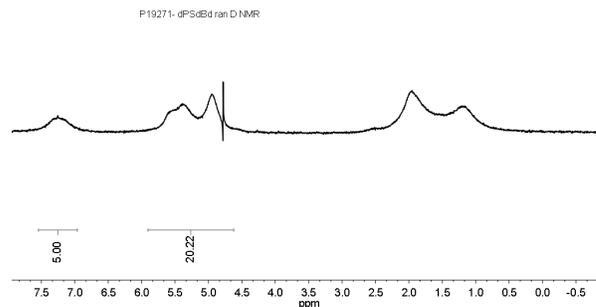
Sample ID: P19271-dPSdPBdran

| | |
|-----------------------|----------------------------|
| Concentration (mg/mL) | 1.1280 |
| Sample dn/dc (mL/g) | 0.1600 |
| Method File | PS80K-Apr129-2015-0000.vcm |
| Column Set | 3x PL 1113-6300 |
| Solvent | THF |



| Sample | MW Number Average (Da) | MW Weight Average (Da) | MW at Peak (Da) | Polydispersity | Intrinsic Viscosity (dL/g) |
|-------------------------------|------------------------|------------------------|-----------------|----------------|----------------------------|
| P19271-dPSdPBdran_01(550).vdt | 19,133 | 21,042 | 21,342 | 1.100 | 1.5107 |

²H NMR (500 MHz, CHCl₃) of d8PS-d6PBd:



DSC of d8PS-d6PBd random copolymer:

