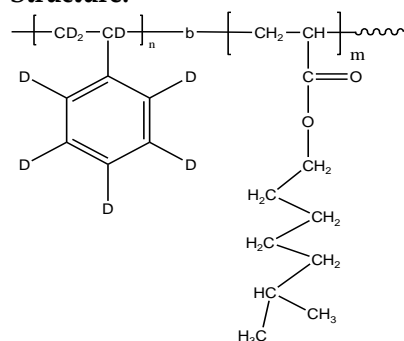


Sample Name: Deuterated Poly(styrene(d8)-b-isooctyl acrylate) (protonated)

Sample #: P9749B-dPSisoOctA

Structure:



Composition:

Mn x 10 ³ dPS-b-IsoOctA	PDI
5.5-b-5.7	1.09
T _g for Iso OctylAcrylate block: -22°C	T _g for PS block: 52°C

Synthesis Procedure:

Deuterated Poly(styrene (d8) -b-isooctyl acrylate) is prepared by the transesterification of the deuterated poly (Styrene (d8)-b-tert.butyl acrylate) di block copolymer in presence of isooctanol (pure isooctanol with no isomer synthesized) . Esterification of tert-butyl ester to isooctanol ester is confirmed by complete disappearance of absorbance at 1360 cm⁻¹ characteristics for the tert.butyl ester.

Purification of the obtained polymer was carried out rigorously as follows to ensure the removal of the catalyst side product:

1. Dissolved the polymer in CHCl₃ and wash with de-ionized distilled water to remove the any soluble organic catalyst used in the trans esterification side product.
2. Polymer extracted from water with chloroform.
3. Polymer solution in CHCl₃ was dried over anhydrous sodium sulfate.
4. Solution filtered and then passed through a column packed with basic Al₂O₃.
5. Solution concentrated on rota-evaporator
6. Solution precipitated in cold methanol
7. Final polymer freeze dried from dioxane.

Characterization:

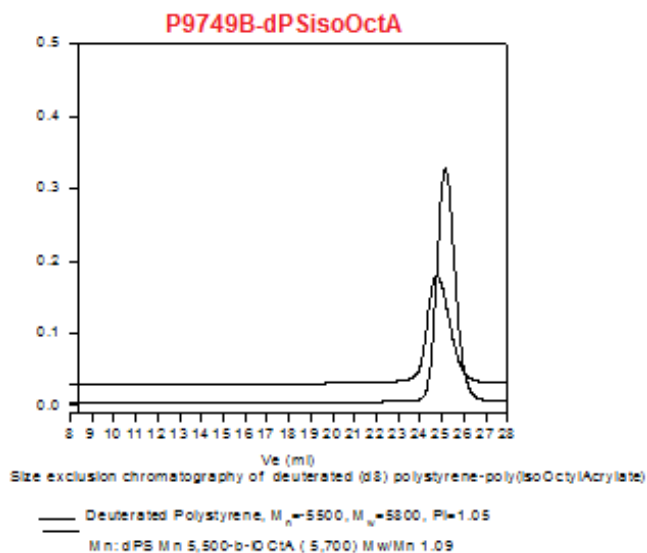
An aliquot of the polystyrene block was terminated before addition of tert.butyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition and Mw/Mn (PDI) for the final polymer after trans-esterification to isooctyl acrylate is determined by SEC.

Thermal analysis was carried out using a Q100 DSC at 10°C/min heating rate. The mid point of thermal transition is considered as glass transition temperature (T_g).

Solubility:

Polymer is soluble in CHCl₃, THF and toluene.

SEC of the block copolymer:



DSC thermogram for PS block:

