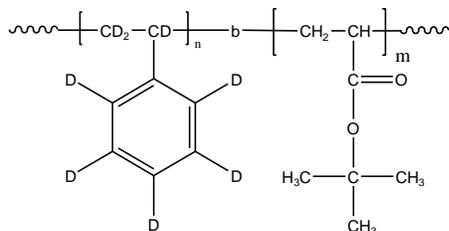


### Sample Name:

Deuterated polystyrene (d<sub>8</sub>)- poly tert.butylacrylate(protonated)

### Sample #: P5997-dPStBuA

### Structure:



### Composition:

Mn x 10 <sup>3</sup>	PDI
30.0-b-14.0	1.18
T <sub>g</sub> for dPS block	101°C
T <sub>g</sub> for tBuA block	47°C

### Synthesis Procedure:

Deuterated poly(styrene (D<sub>8</sub>)-b-t-butyl acrylate) is prepared by living anionic polymerization in THF at -78 °C using sec.BuLi initiator in the presence of LiCl. Deuterated Polystyrene macroanions were end capped with a unit of diphenyl ethylene (DPE) before adding tert.butylacrylate (tBuA) monomer. For further details please see our published articles.<sup>1-3</sup>

### Characterization:

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors from Viscotek Co. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used.

### Thermal analysis

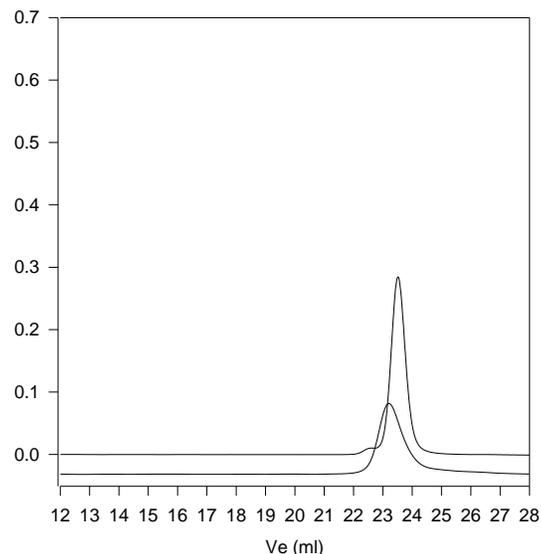
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min. The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T<sub>g</sub>).

### Solubility:

Deuterated polystyrene-b-tert.butylacrylate is soluble in THF, dioxane. Toluene, benzene and CHCl<sub>3</sub>. It precipitates out from methanol/water.

### SEC of the product:

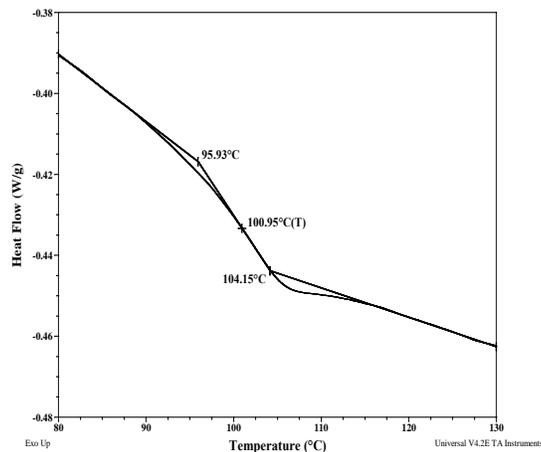
P5997-dPStBuA



Size exclusion chromatography of deuterated (d<sub>8</sub>) polystyrene-poly(t-butyl acrylate)

— Deuterated Polystyrene, M<sub>n</sub>=30000, M<sub>w</sub>=32500, PI=1.08  
— Block Copolymer PdPS(30000)-b-PtBuA(14000), PI=1.18

### DSC thermogram for dPS block:



### DSC thermogram for PtBuA block;

