Sample Name:
Poly(methyl methacrylate)-d$_8$, syndiotactic

Sample #: **P19571-dPMMA**

**Structure:**

$$\left[CD_2 - \underset{\underset{\underset{CD_3}{O}}{\underset{|}{O}}}{\overset{\overset{CD_3}{|}}{\underset{|}{\underset{C=O}{C}}}} \right]_n$$
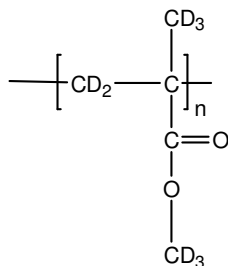
Composition:

Mn x 10^3	Mw/Mn
34.0	1.5

Synthesis Procedure:
Deuterated poly(methyl methacrylate)-d$_8$ is obtained by living anionic polymerization using sec.BuLi as initiator end capped with a unit of diphenyl ethylene or few units of α-methylstyrene. The polymerization of MMA monomer is carried out in THF at –78 °C in the presence of LiCl as additive. The polymerization scheme can be illustrated as follows:
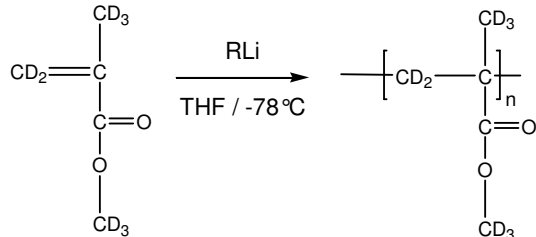
Characterization:
The molecular weight and polydispersity index (M_w/M_n) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co. ^{1}H NMR analysis was carried out on Varian instrument at 500MHz.
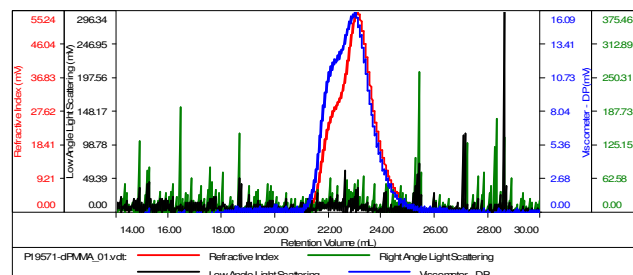
Solubility:
Deuterated poly(methyl methacrylate)-d$_8$ is soluble in THF, CHCl$_3$, toluene and dioxane. The polymer precipitates from hexanes, methanol and ethanol.

SEC of homopolymer:

Sample ID-P19571-dPMMA

Concentration (mg/mL)	0.3983
Sample dn/dc (mL/g)	0.0840
Method File	PS80K-Nov-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)
P19571-dPMMA_01.vdt	34,145	50,665	22,198	1.484	1.9639