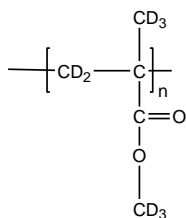


**Sample Name:** Poly(methyl methacrylate)-d<sub>8</sub>

**Sample #:** P9719-dPMMA (atactic rich)

**Structure:**

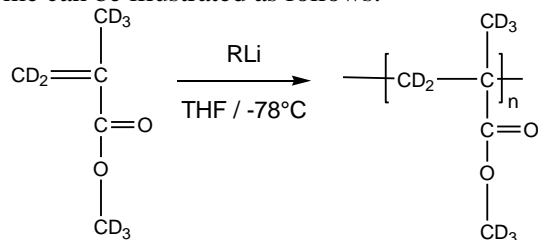


**Composition:**

| Mn x 10 <sup>3</sup> | PDI  |
|----------------------|------|
| 32.5                 | 1.46 |

**Synthesis Procedure:**

Deuterated poly(methyl methacrylate)-d<sub>8</sub> 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 (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. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple detectors from Viscotek Co. <sup>1</sup>H NMR analysis was carried out on Varian instrument at 500MHz.

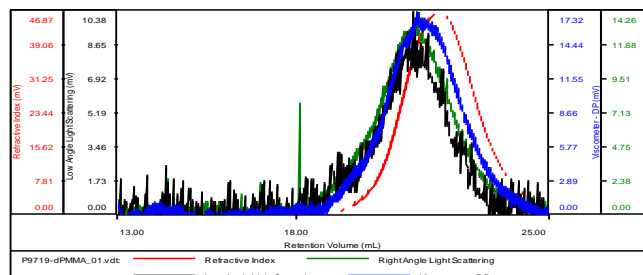
**Solubility:**

Deuterated poly(methyl methacrylate)-d<sub>8</sub> is soluble in THF, CHCl<sub>3</sub>, toluene and dioxane. The polymer precipitates from hexanes, methanol, and ethanol.

**SEC elugram of Homopolymer:**

**P9719-MMA**

|                       |                        |
|-----------------------|------------------------|
| Concentration (mg/mL) | 2.3049                 |
| Sample dn/dc (mL/g)   | 0.0840                 |
| Method File           | PS80K-Feb2017-0000.vcm |
| Column Set            | 3x PL 1113-6300        |
| Solvent               | THF                    |



| Sample             | Mn (Da) | Mw (Da) | Mw/Mn | IV (dL/g) | Mp (Da) |
|--------------------|---------|---------|-------|-----------|---------|
| P9719-dPMMA_01.vdt | 32,685  | 47,918  | 1.466 | 0.4849    | 34,142  |