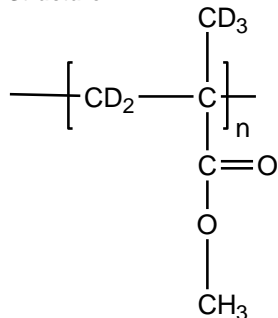


**Sample Name: Deuterated Poly(methyl methacrylate)-d<sub>5</sub> (backbone)**

**Sample #: P10226-d5PMMA**

**Structure:**

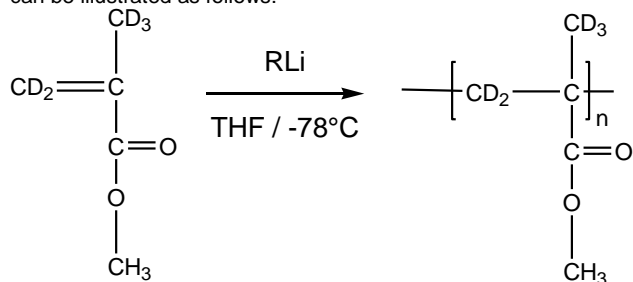


**Composition:**

Mn x 10 <sup>3</sup>	PDI
820.0	1.9

**Synthesis Procedure:**

Deuterated poly(methyl methacrylate)-d<sub>5</sub> is obtained by living anionic polymerization using sec.BuLi as initiator end capped with a unit of diphenyl ethylene or few units of  $\alpha$ -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:**

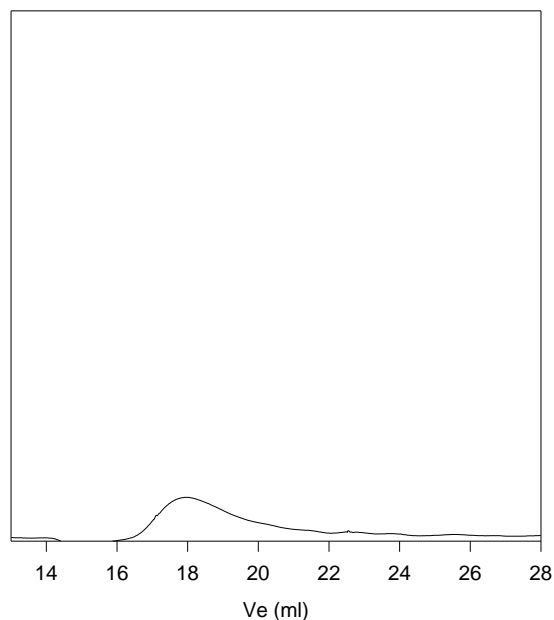
The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with triple 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>5</sub> is soluble in THF, CHCl<sub>3</sub>, toluene and dioxane. The polymer precipitates from hexanes, methanol and ethanol.

**SEC of Homopolymer:**

**P10226-d5PMMA**



Size exclusion chromatograph of Poly methyl methacrylate(d<sub>5</sub>):

M<sub>n</sub>= 820,000, M<sub>w</sub>=1,500,400, PI=1.9