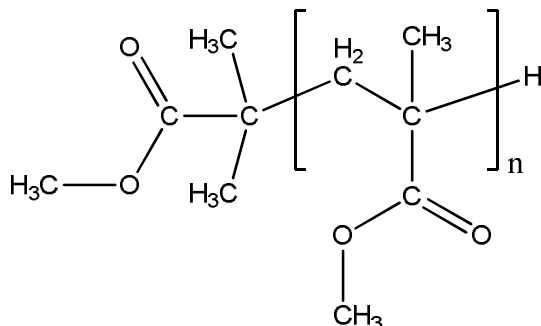


Sample Name: Poly (methyl methacrylate)

*Different microstructure*

Sample #: P19842-MMA

**Structure:**



**Composition:**

$M_n \times 10^3$ (g/mol)	$M_w/M_n$
2.7	1.3

Syndio- : Hetero- : Iso-tactic	$T_g$
54 : 41 : 5	94 °C

**Synthesis procedure:**

Poly(methyl methacrylate) was synthesized by GTP method using MMA monomer and toluene as a solvent.

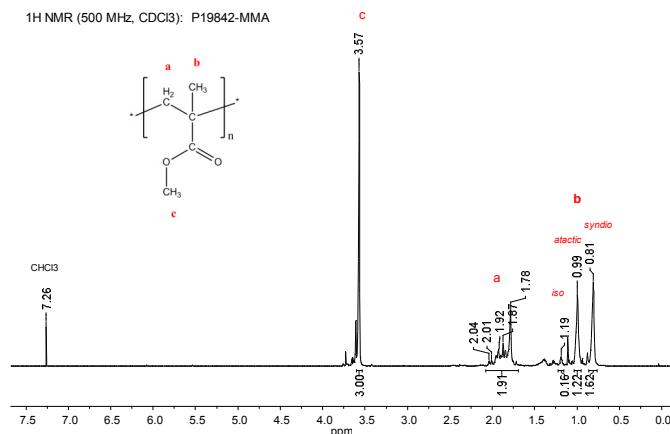
**Characterization:**

Tacticity of the polymer was calculated from  $^1\text{H}$  NMR data. The molecular weight and polydispersity index ( $M_w/M_n$ ) were 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. Thermal analysis was performed on TA Instruments Q100 differential scanning calorimeter (DSC) under a nitrogen atmosphere. The glass transition temperature ( $T_g$ ) of the polymer was measured at a scan rate of 10°C/min shortly after creating thermal history of the sample.

**Solubility:**

The polymer is soluble in THF, chloroform.

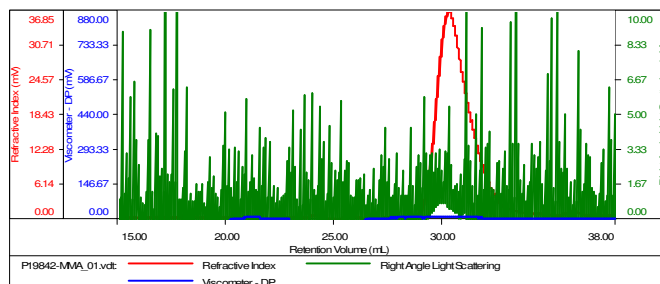
**$^1\text{H}$  NMR spectrum of PMMA:**



**SEC elugram of the polymer:**

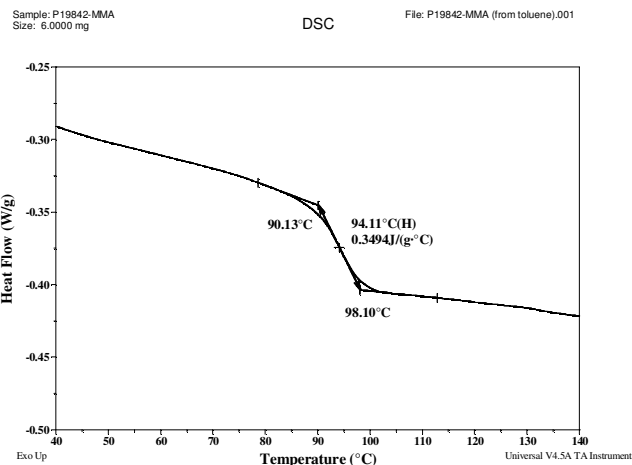
Sample ID: P19842-MMA

Concentration (mg/mL)	1.8761
Sample dn/dc (mL/g)	0.0940
Method File	PS80K-April-18-2016-0001.vcm
Column Set	3x PL 1113-6300
Solvent	THF



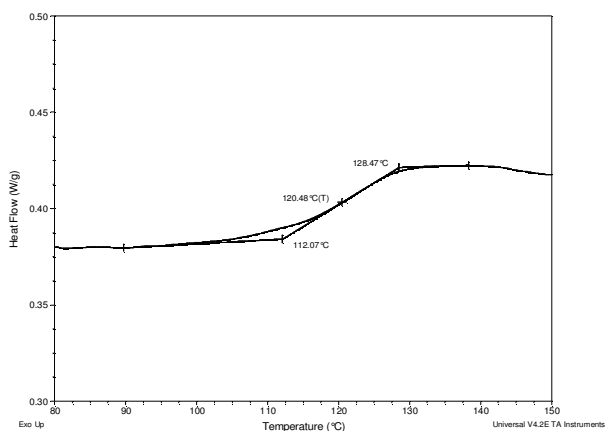
Sample	Mn (Da)	Mw (Da)	Mw/Mn	IV (dL/g)	Rh (nm)	Ret Vol (mL)
P19842-MMA_01	2,720	3,558	1.308	0.0747	2.41	30.250

**DSC thermogram of the polymer:**

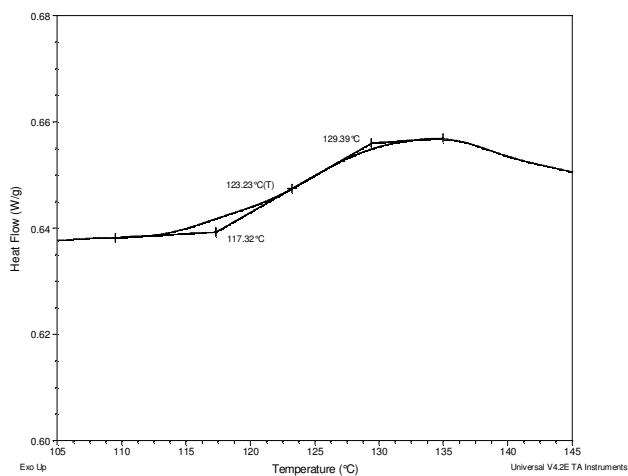


## Reference thermograms of PMMA:

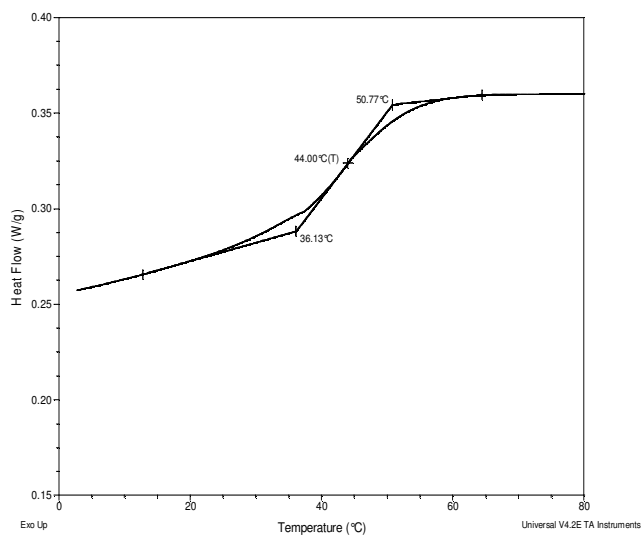
**(a) syndiotactic >79%**



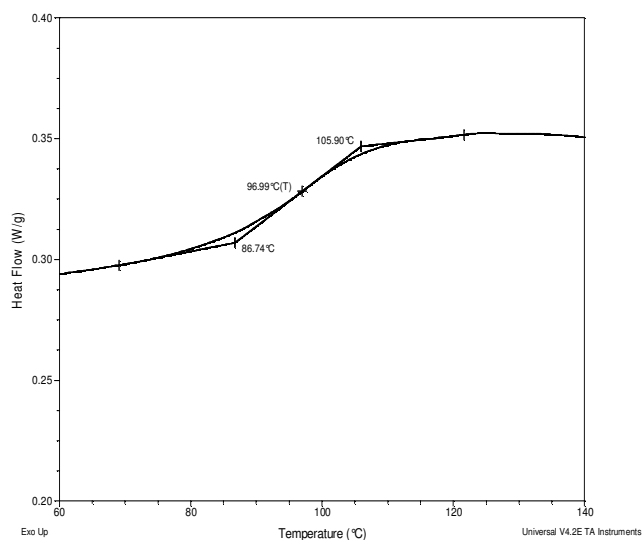
**(b) syndiotactic >85%**



**(c) isotactic >97%**



**(d) atactic**



## Summary of DSC results for PMMA of different tacticity:

<i>PMMA microstructure</i>	<i>Tacticity Syndio : Iso : Hetero</i>	<i>T<sub>g</sub> (°C)</i>
Syndiotactic >79%	79 : 19 : 2	120°
Syndiotactic >85%	86 : 0 : 14	123°
Isotactic >97%	0 : 97 : 3	44°
Atactic	56 : 6 : 38	97°