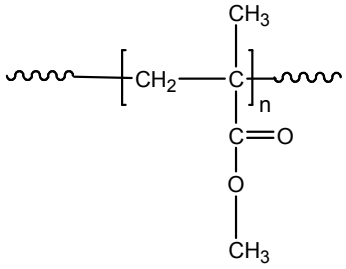
Sample Name: **Poly (methyl methacrylate)**

Atactic polymer

Sample #: **P19397-MMA**

Structure:



Composition:

Mn x 10^3	PDI
321.0	1.9

Syndio : Hetero : Iso	42 : 52 : 6
T_g	104°C

Synthesis Procedure:

Tacticity of the poly(methyl methacrylate) is tailored by anionic polymerization of MMA monomer in different polarity solvents mixture and using different ligands.

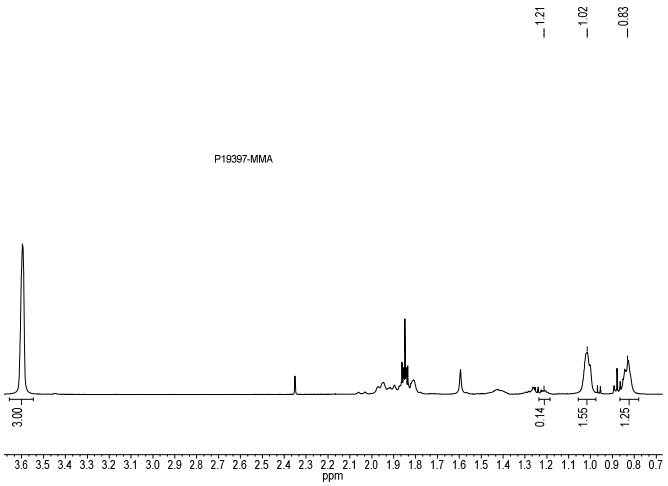
Characterization:

Tacticity of the polymer was determined by 1H NMR.
The molecular weight and polydispersity index (PDI) 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 of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of 10°C/min.The inflection glass transition temperature (T_g) of the sample has been considered.

Solubility:

The polymer is soluble in chloroform.

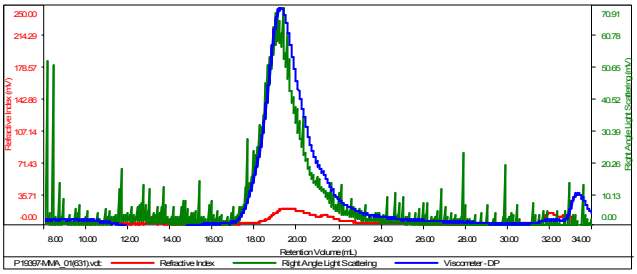
^{1}H NMR spectrum of PMMA:



SEC elugram of PMMA homopolymer:

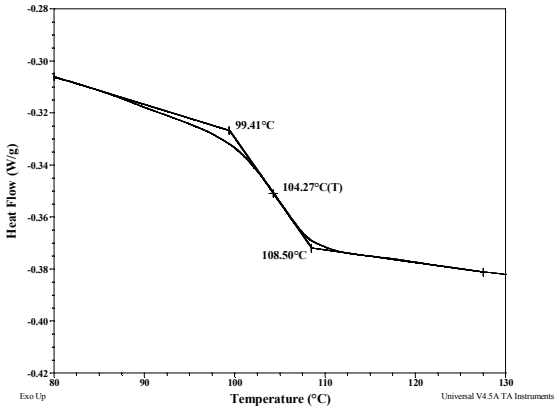
Sample ID:P19397-MMA

Concentration (mg/mL)	0.5283
Sample dn/dc (mL/g)	0.0840
Method File	PS80K-June30-2015-0000.vcm
Column Set	3x PL 1113-6300
Solvent	THF



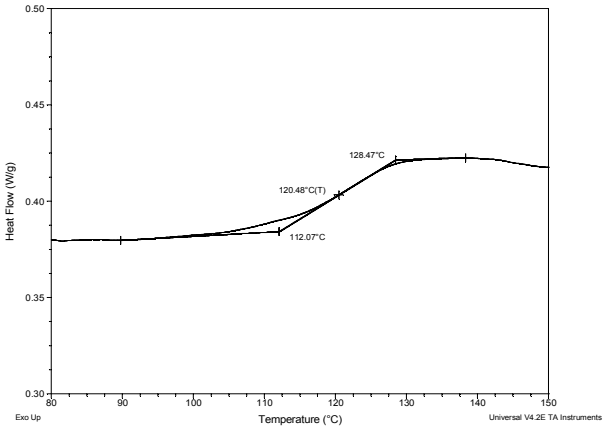
Sample	MW Number Average (Da)	MW Weight Average (Da)	MW at Peak (Da)	Polydispersit	Intrinsic Viscosity (dL/g)
P19397-MMA_01(631).vdt	321,286	640,519	540,198	1.994	4.6379

DSC thermogram of the polymer

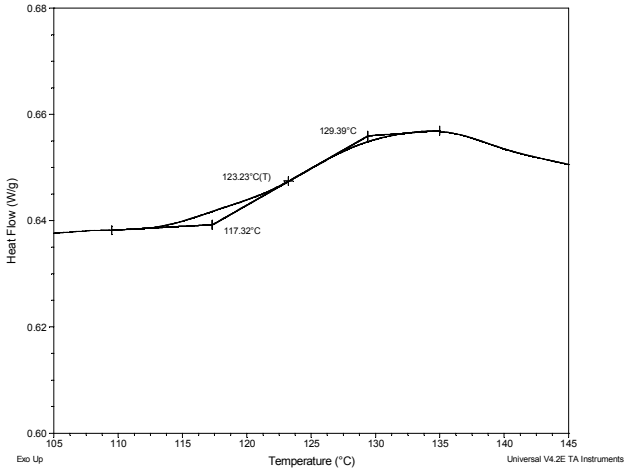


Thermograms of PMMA:

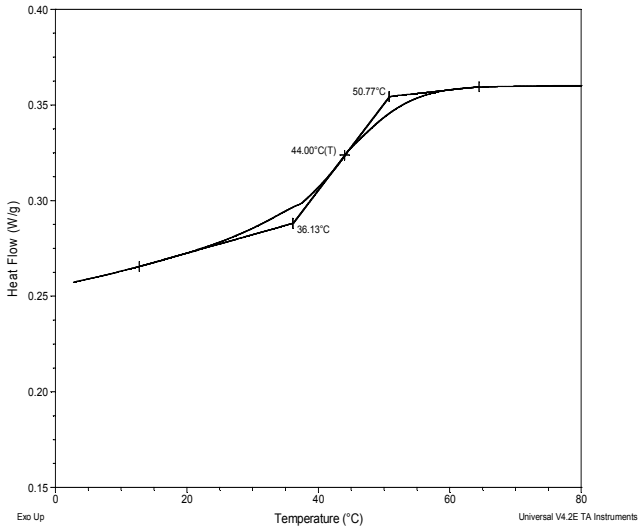
(a) syndiotactic >79%



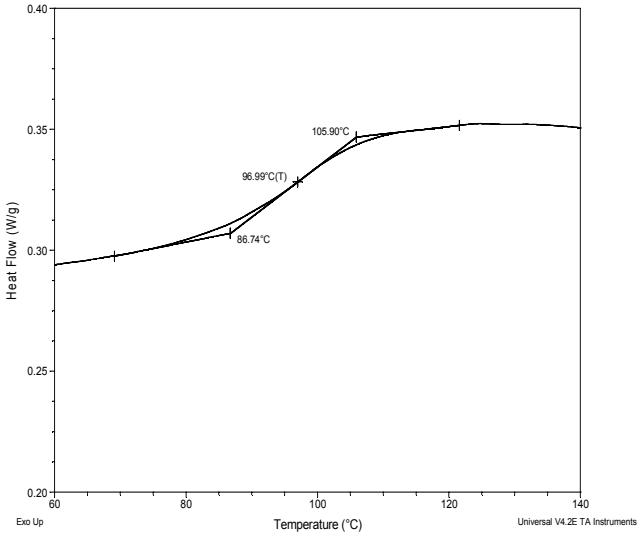
(b) syndiotactic >85%



(c) isotatctic >97%



(d) atactic



Summary of DSC results for PMMA of different tacticity:

PMMA microstructure	*Tacticity Syndio : Iso : Hetero*	T_g (^oC)
Syndiotactic >79%	79 : 19 : 2	120
Syndiotactic >85%	86 : 0 : 14	123
Isotactic >97%	0 : 97 : 3	44
Atactic	56 : 6 : 38	97