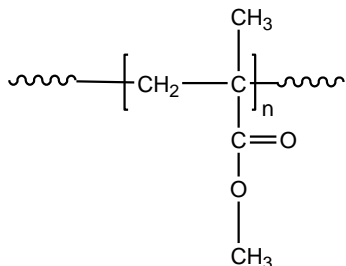


Sample Name: **Poly(methyl methacrylate)**
Isotactic (>70%)

Sample #: **P5450B-MMA**

Structure:



Composition:

$M_n \times 10^3$	PDI
27.0	1.6
Syndio : Hetero : Iso	9 : 18 : 73
T_g	53°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:

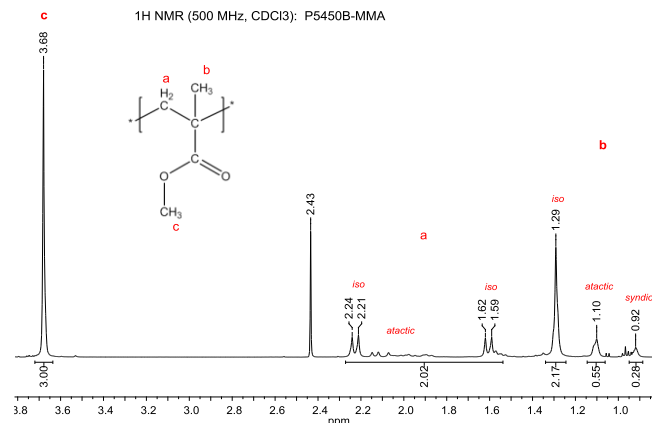
Tacticity of the polymer was determined by ^1H NMR. The molecular weight and polydispersity index (PDI) were obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns 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 $10^\circ\text{C}/\text{min}$. The inflection glass transition temperature (T_g) of the sample has been considered.

Solubility:

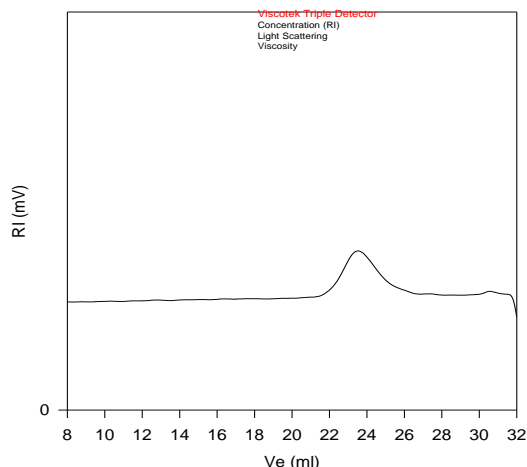
The polymer is soluble in chloroform.

^1H NMR spectrum of PMMA:



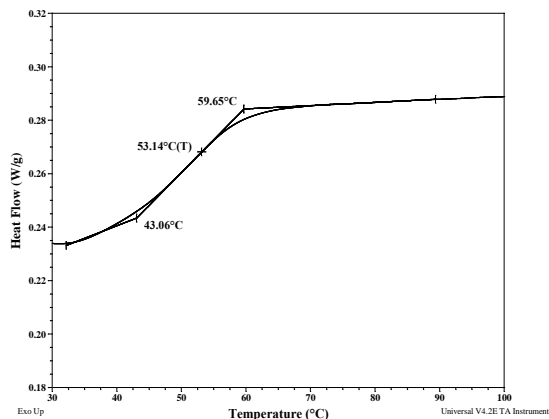
SEC elugram of PMMA homopolymer:

P5450B-MMA



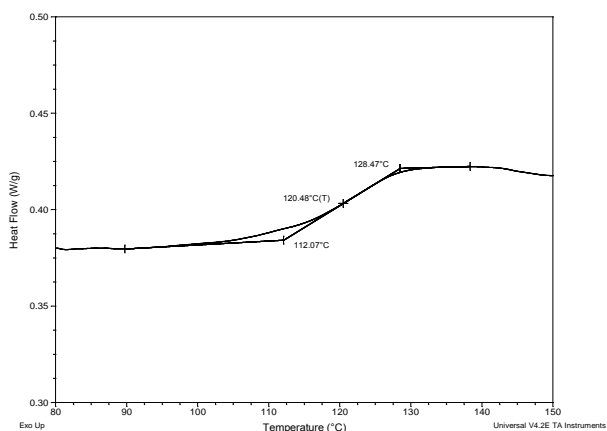
Size Exclusion Chromatography of isotactic poly(methyl methacrylate):
 $M_n = 27,000$, $M_w = 43,500$, $M_w/M_n = 1.6$

DSC thermogram of the polymer P5450B-MMA:

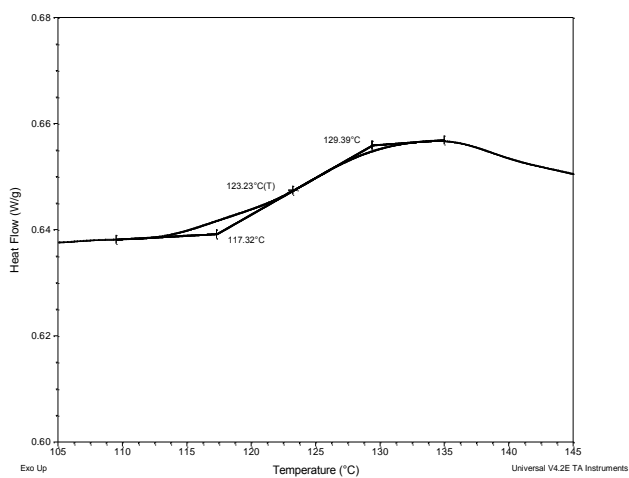


Thermograms of PMMA:

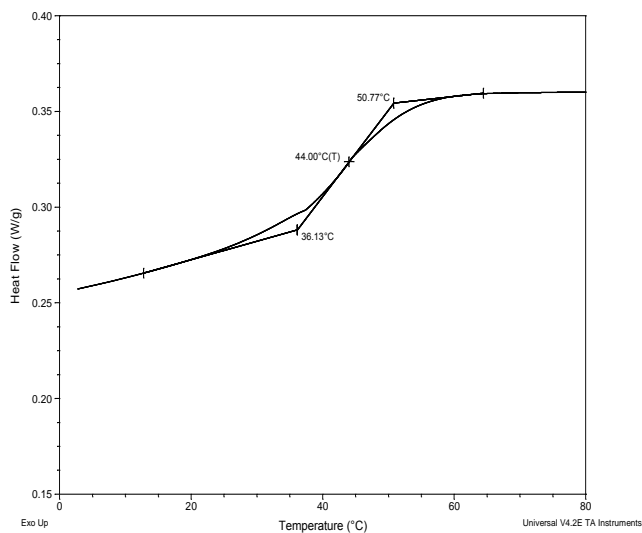
(a) syndiotactic >79%



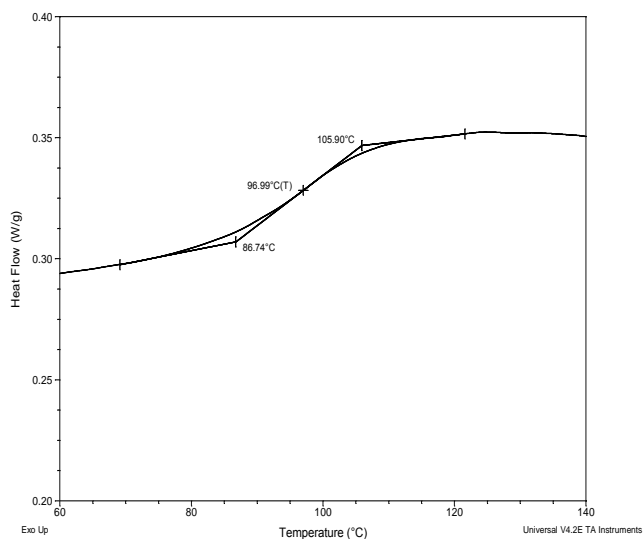
(b) syndiotactic >85%



(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_g (°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