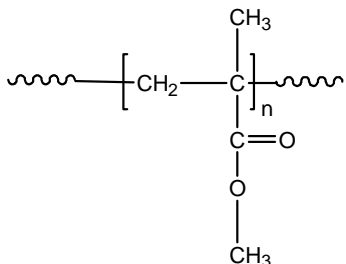


Sample Name: **Poly(methyl methacrylate)**  
*Atactic polymer*

Sample #: **P18721-MMA**

**Structure:**



**Composition:**

$M_n \times 10^3$	PDI
32.0	3.0
Syndio : Hetero : Iso	31 : 55 : 14
$T_g$	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:**

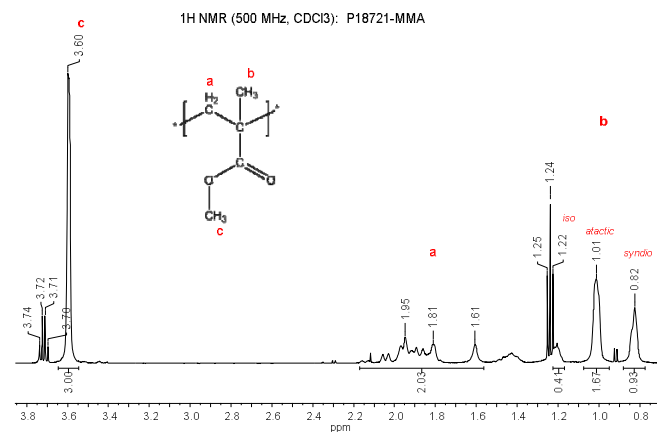
Tacticity of the polymer was determined by  $^1\text{H}$  NMR. The molecular weight and polydispersity index (PDI) were obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three 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:**

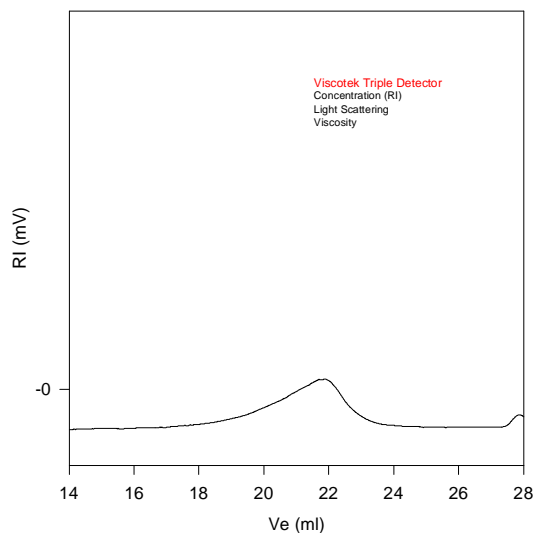
The polymer is soluble in chloroform.

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



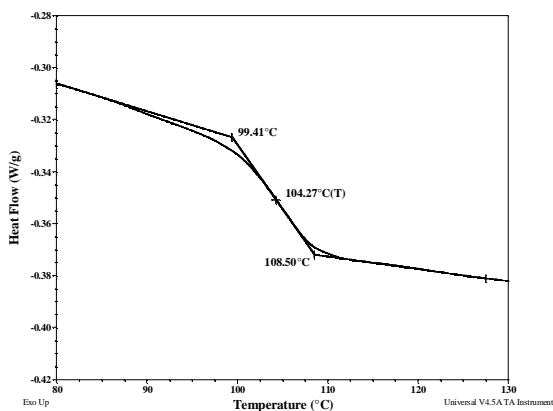
**SEC elugram of PMMA homopolymer:**

**P18721-MMA**



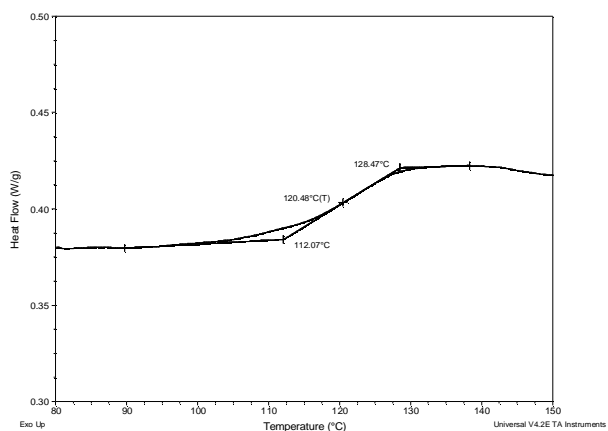
Size Exclusion Chromatography of poly(methyl methacrylate)-  
 —  $M_n = 32,000$ ,  $M_w = 96,000$ ,  $M_w/M_n = 3.0$

**DSC thermogram of the polymer P18721-MMA:**

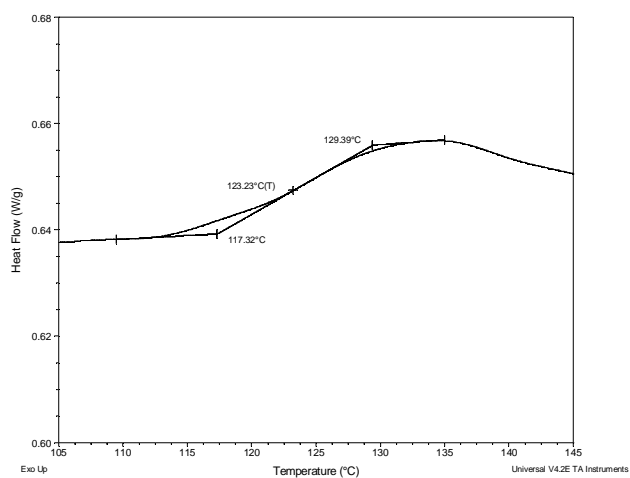


## Thermograms of PMMA:

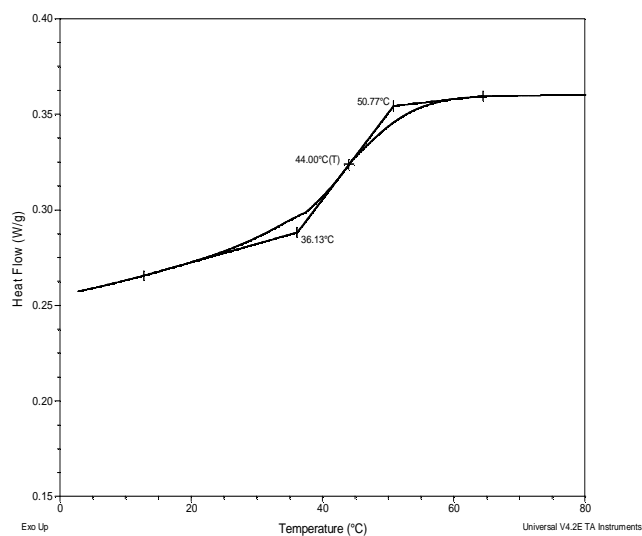
**(a) syndiotactic >79%**



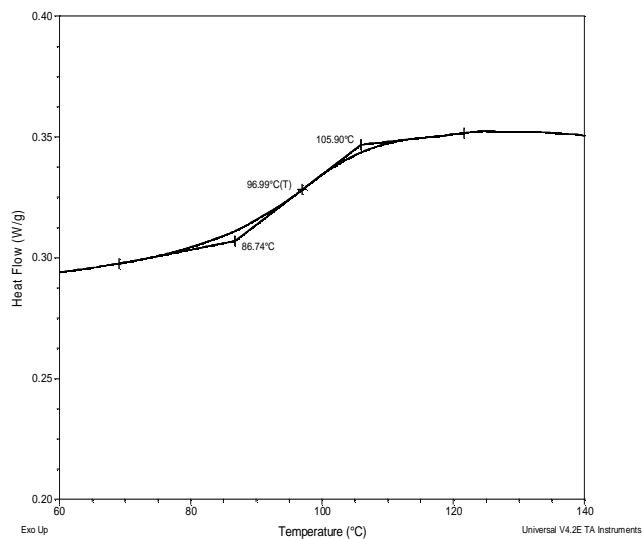
**(b) syndiotactic >85%**



**(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<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