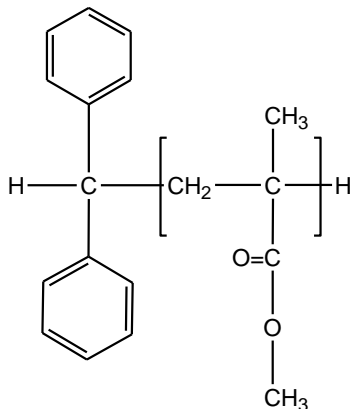


**Sample Name:** Poly(methyl methacrylate)

**Sample #:** P5114-MMA

**Structure:**



**Composition:**

$M_n \times 10^3$	PDI
7.0	1.2
Syndio : Hetero : Iso	35 : 55 : 10

**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:**

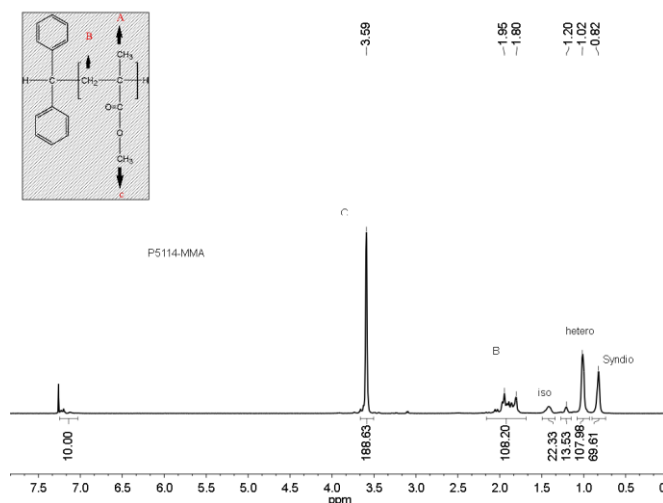
Tacticity of the polymer was determined by  $^1\text{H}$  NMR. The molecular weight and polydispersity index (PDI) were obtained by size exclusion chromatography (SEC) in THF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three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

**Solubility:**

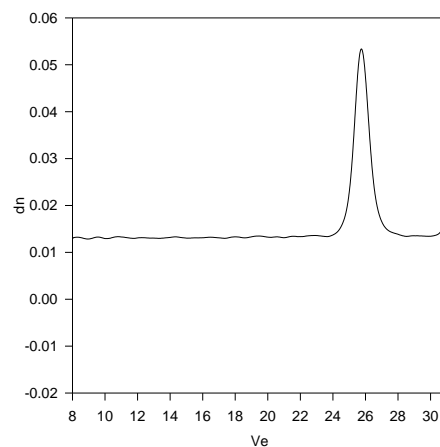
The polymer is soluble in THF.

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



**SEC elugram of PMMA homopolymer:**

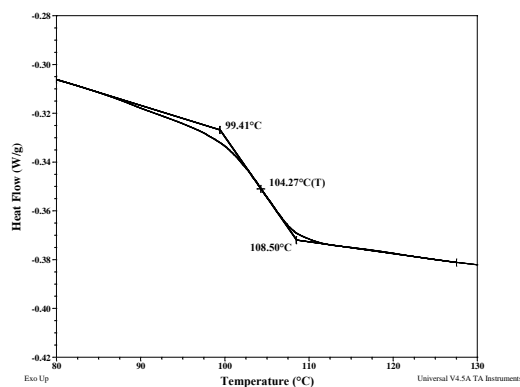
**P5114-MMA**



Size Exclusion Chromatography of Polymer

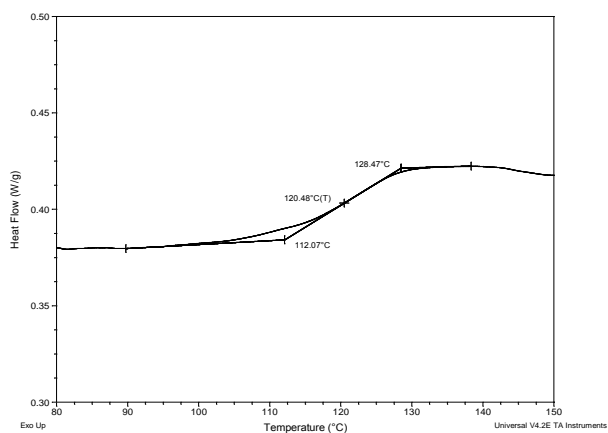
$M_n=7000$ ,  $M_w=8400$ ,  $PI=1.19$

**DSC thermogram of the polymer:**

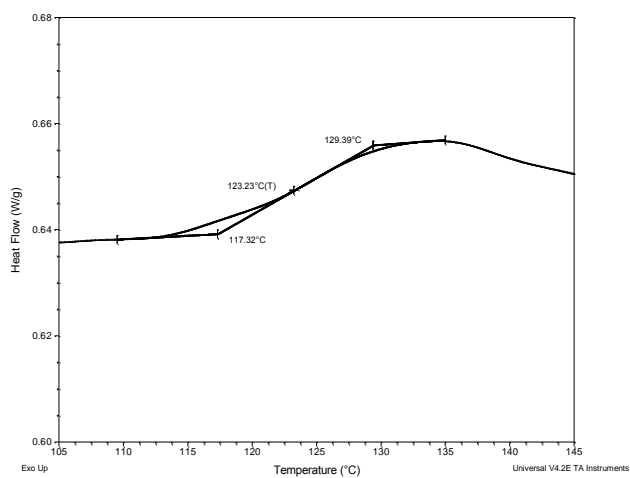


## DSC thermograms of PMMA:

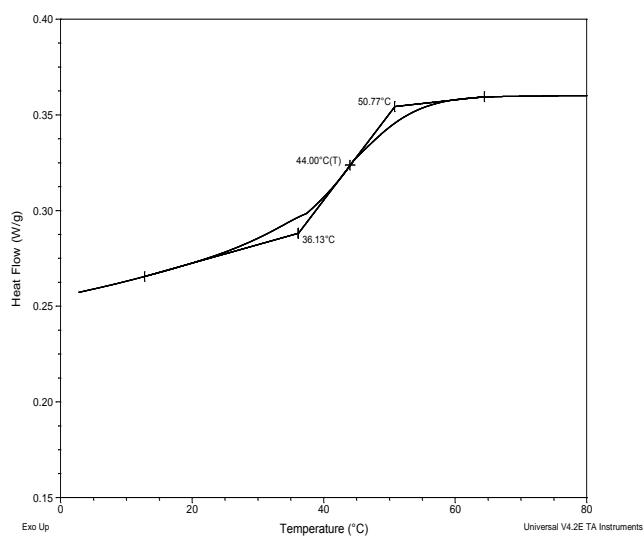
(a) syndiotactic >79%



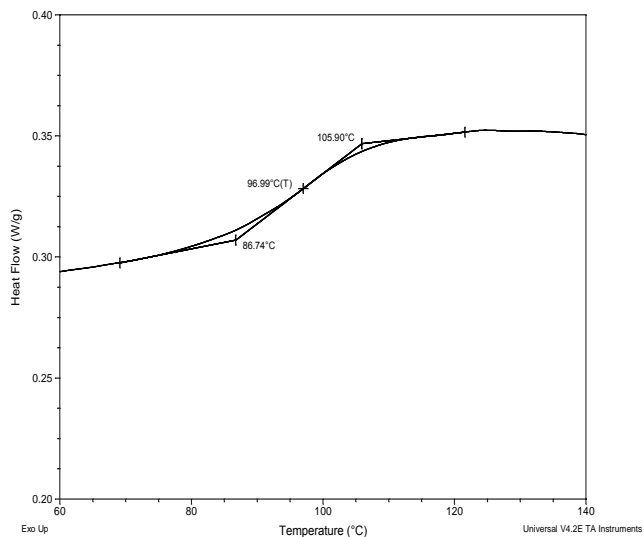
(b) syndiotactic >85%



(c) isotactic >97%



(d) atactic



## Summary of glass transition temperatures of PMMA of different tacticity:

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