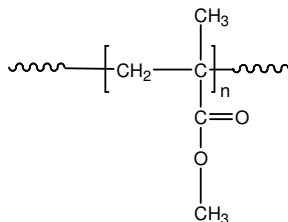


Sample Name: Poly(methyl methacrylate)

Different microstructure

Sample #: P5181-MMA

Structure:



Composition:

$M_n \times 10^3$	PDI
72.0	2.6

Syndio : Hetero : Isotactic	56 : 38 : 6
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Synthesis Procedure:

Poly(methyl methacrylate) was obtained by free radical polymerization (ATRP) using CuBr as a catalyst.

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.

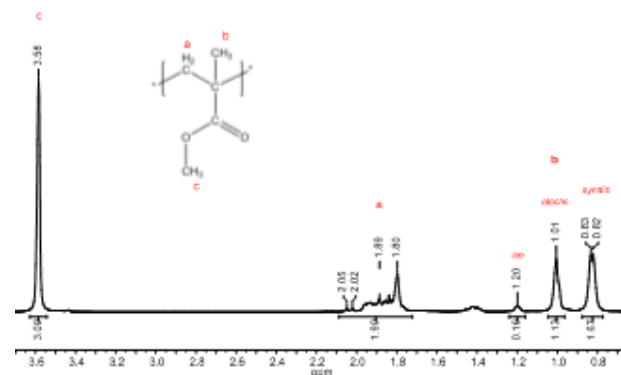
Solubility:

The polymer is soluble in THF, CHCl_3 , toluene and dioxane. The polymer precipitates from cold methanol and ethanol.

T_g vs MW for selected atactic PMMA:

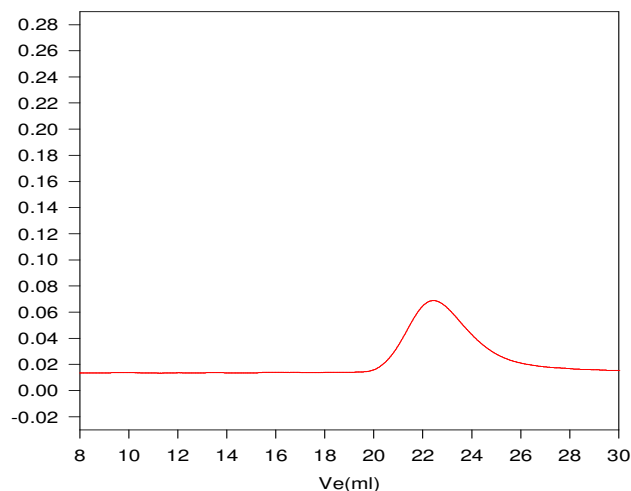
$M_n \times 10^3$	T_g ($^\circ\text{C}$)	$M_n \times 10^3$	T_g ($^\circ\text{C}$)
1.1	51	36	98
2.5	76	55	111
5.0	91	70	107
15	101	127	115
19	107	230	114
29	96	700	121

^1H NMR spectrum of PMMA:



SEC elugram of PMMA homopolymer:

P5181-MMA



Size exclusion chromatography of poly(methyl methacrylate):
 $M_n=72,000$, $M_w=187,000$, $M_w/M_n=2.6$

DSC:

T_g of atactic poly methyl methacrylate as function of molecular weight

