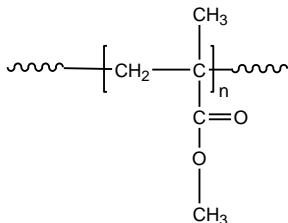


Sample Name: **Poly(methyl methacrylate)**

Different microstructure

Sample #: **P9140B-MMA**

Structure:



Composition:

$M_n \times 10^3$	PDI
139.0	1.09
Syndio : Hetero : Isotactic	56 : 39 : 5

Synthesis Procedure:

Poly(methyl methacrylate) is obtained by free radical polymerization or ATRP using CuBr as catalyst / or GTP process in toluene or THF.

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.

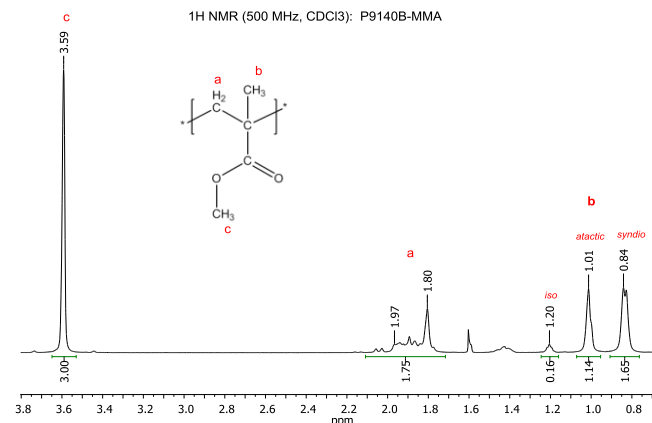
Solubility:

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:

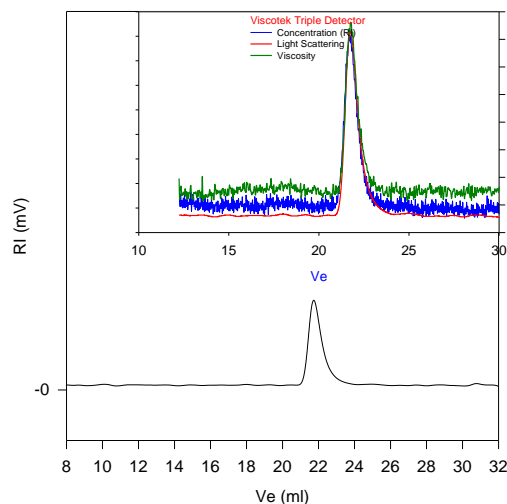
$M_n \times 10^3$	$T_g (^\circ\text{C})$	$M_n \times 10^3$	$T_g (^\circ\text{C})$
1.1	51	36	98
2.5	76	55	111
5.0	91	70	107
15	101	127	115
19	107	230	114
29	96	700	121

^1H NMR spectrum of PMMA:



SEC elugram of PMMA homopolymer:

P9140B-MMA



Size Exclusion Chromatography of poly(methyl methacrylate)-Atactic:

$M_n = 139,000$, $M_w = 151,000$, $M_w/M_n = 1.09$
 Solution Viscosity in THF At 35°C : 0.596 dL/g
 $R_g W$: 14.95 nm
 dn/dc in THF at 35°C : 0.084 mL/g

DSC:

T_g of atactic poly methyl methacrylate as function of molecular weight

