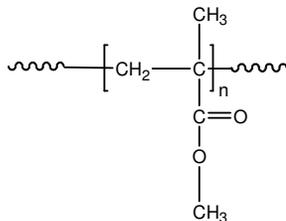


## Sample Name: Poly(methyl methacrylate)

Different microstructure

Sample #: P5180-MMA

### Structure:



### Composition:

$M_n \times 10^3$	PDI
69.0	3.0
Syndio : Hetero : Isotactic	56 : 38 : 6

### 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  $^1\text{H}$  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.

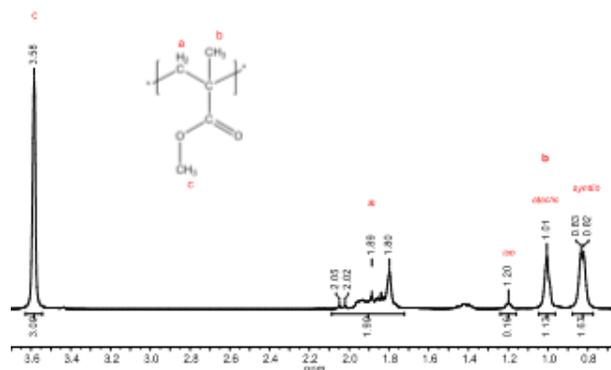
### Solubility:

The polymer is soluble in THF,  $\text{CHCl}_3$ , toluene and dioxane. The polymer precipitates from cold methanol and ethanol.

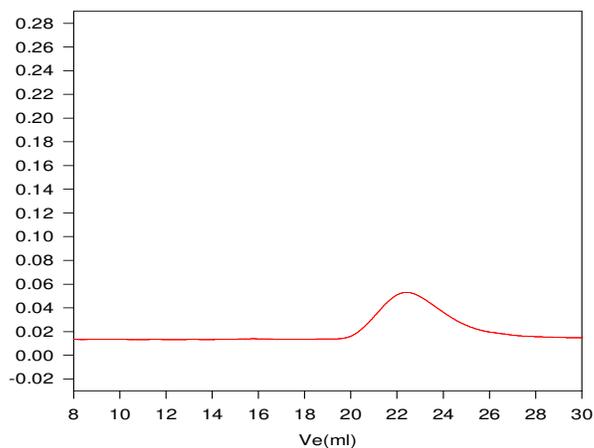
### $T_g$ vs MW for selected atactic PMMA:

$M_n \times 10^3$	$T_g$ ( $^\circ\text{C}$ )	$M_n \times 10^3$	$T_g$ ( $^\circ\text{C}$ )
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

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



### SEC elugram of PMMA homopolymer: P5180-MMA



Size exclusion chromatography of poly(methyl methacrylate):  
 $M_n=69,000$ ,  $M_w=207,000$ ,  $M_w/M_n=3.0$

### DSC:

$T_g$  of atactic poly methyl methacrylate as function of molecular weight

