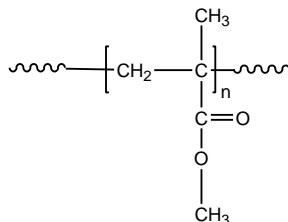<u>Sample Name</u>: **Poly(methyl methacrylate)**

Different microstructure

<u>Sample #</u>: **P5186-MMA**

Structure:

Composition:

Mn x 10^3	PDI
10.5	1.8

Syndio : Hetero : Isotactic	56 : 38 : 6

Synthesis Procedure:

Poly(methyl methacrylate) is obtained by free radical polymerization (ATRP) using CuBr as 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^oC/min.The inflection glass transition temperature (T_g) of the sample has been considered.
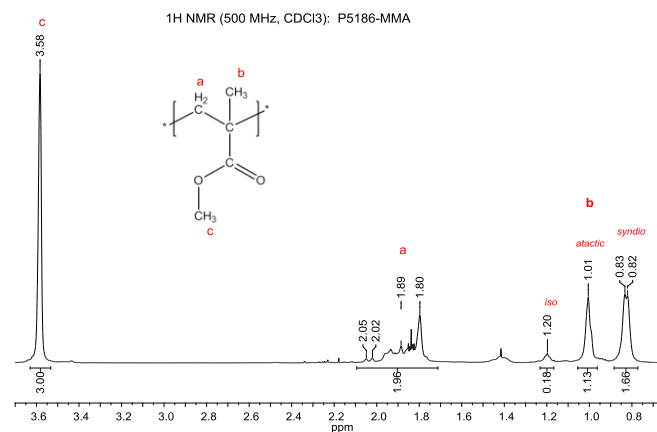
Solubility:

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:

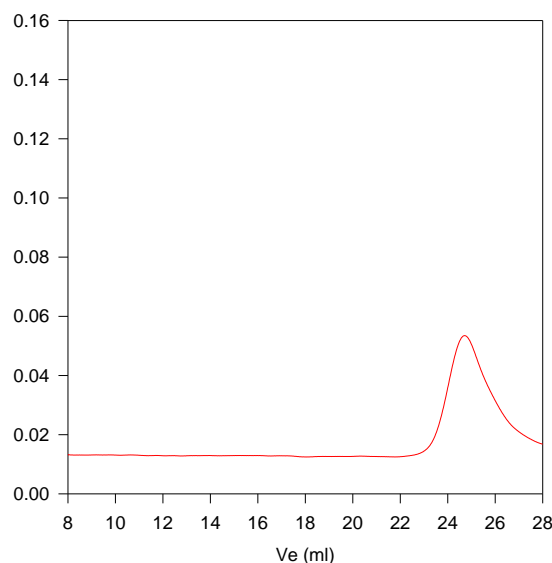| $M_n \times 10^3$	T_g (^oC)	$M_n \times 10^3$	T_g (^oC)
1.1	51	36	98
2.5	76	55	111
5.0	91	70	107
15	101	127	115
19	107	230	114
29	96	700	121

^{1}H NMR spectrum of PMMA:

SEC elugram of PMMA homopolymer:

P5186-MMA

Size exclusion chromatograph of polymethylmethacrylate-rich in atactic: M_n=10,500, M_w=19,000, PI=1.8

DSC:

Tg of atactic poly methyl methacrylate as function of molecular weight

(v. I-02)