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

Different microstructure

Sample #: **P8442-MMA**

Structure:

CH₃
[CH₂─C]ₙ
C═O
O
CH₃
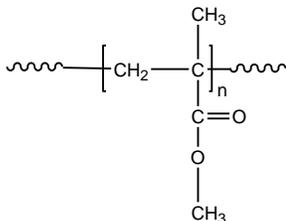
Composition:

Mn x 10^3	PDI
17.0	1.5

Syndio : Hetero : Isotactic	54 : 39 : 7

Synthesis Procedure:

Poly(methyl methacrylate) is obtained by controlled radical polymerization or GTP process.

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°C/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$_n$×10^3	T$_g$ (^{o}C)	M$_n$×10^3	T$_g$ (^{o}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}H NMR spectrum of PMMA:

1H NMR (500 MHz, CDCl3): P8442-MMA
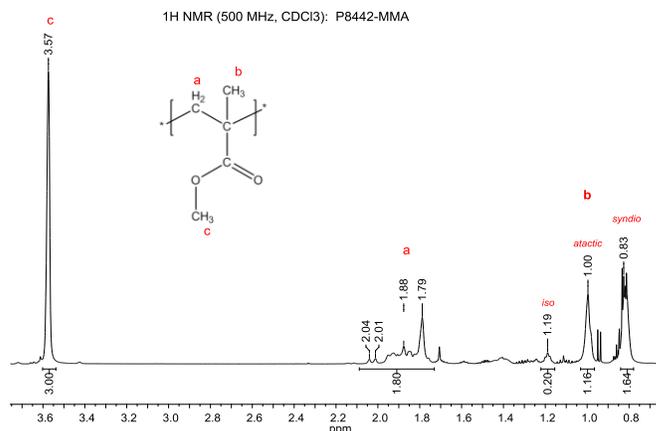
SEC elugram of PMMA homopolymer:
P8442-MMA
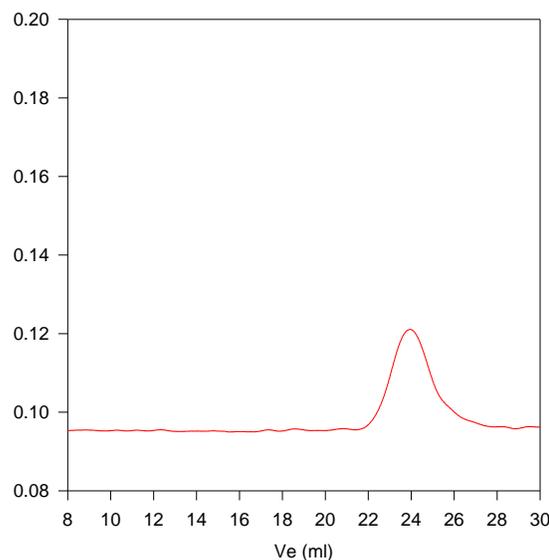
Size exclusion chromatograph of polymethylmethacrylate-rich in atactic: M$_n$=17000, M$_w$=25500, PI=1.5

DSC:

Tg of atactic poly methyl methacrylate as function of molecular weight

(v. I-02)