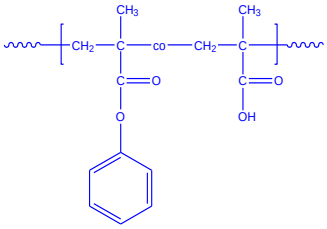
Sample Name:

Poly(phenyl methacrylate-co-methacrylic acid) Random copolymer

Sample #: **P6262-PhMAMAAran**

Structure:

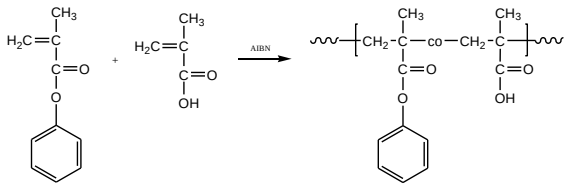


Composition:

Mn x 10^3 (MAA mol%)	Mw/Mn (PDI)
127.7 (15.0%)	2.30
T_g of random polymer	142°C

Synthesis Procedure:

Poly(phenyl methacrylate-co-methacrylic acid) is prepared by free radical polymerization in THF with AIBN as initiator. The reaction scheme is shown below:



Characterization:

An aliquot of the copolymer was esterified with methanol to block all the carboxyl group. The methylation sample was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI), the instrument equipped by Viscotek triple detector to obtain the absolute molecular weight. The chemical composition was calculated from ^{1}H-NMR spectroscopy by comparing the peak area of the phenyl protons at 6.8-7.4 ppm with the peak area of methyl methacrylate at 3.6 ppm.

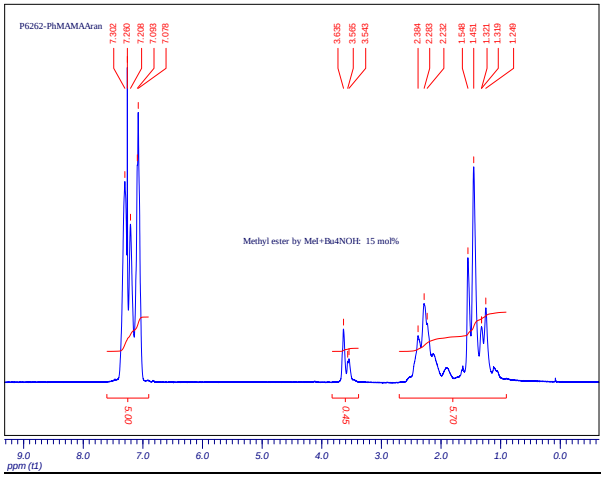
Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°C/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (T_g).

Solubility:

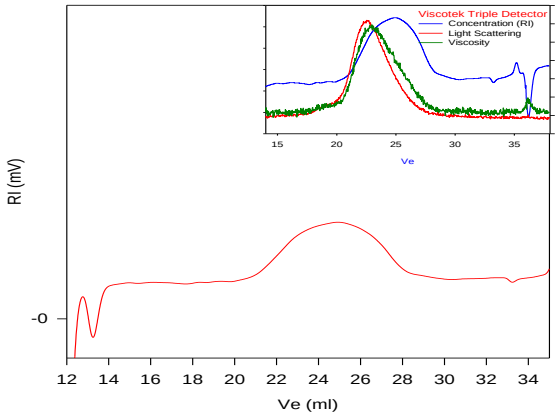
Poly(phenyl methacrylate-co-methacrylic acid) is soluble in THF, DMF, and partially in chloroform, depending on the chemical composition.

^{1}H NMR spectrum of the methyl esterified sample



SEC profile of the random copolymer

P6262-PhMAMAAran



Size Exclusion Chromatography of random copolymer of phenyl methacylate and methacrylic acid):

M_w = 294,400, M_n = 127,700, M_w/M_n = 2.30
Rg = 15.04nm.
[η] = 0.407 (dL/g)

(from Viscotek Triple detector)

DSC thermogram for the sample: