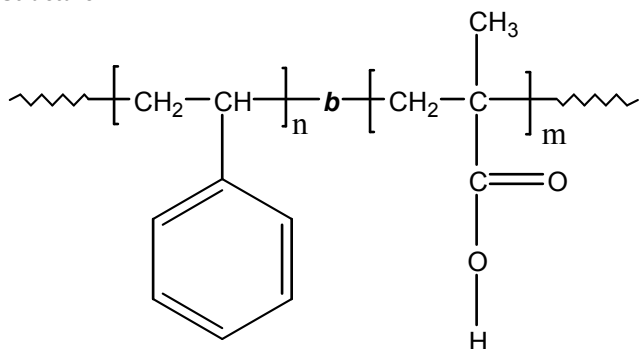


Sample Name: Poly(styrene-*b*- methacrylic acid)

Sample #: P3752B-SMAA or their salt

Structure:

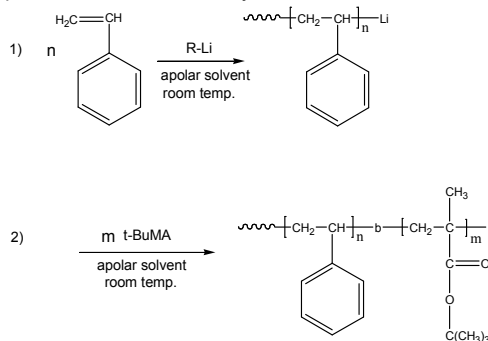


Composition:

Mn x 10 ³ PS- <i>b</i> -PMAA	PDI
2.5- <i>b</i> -15.5	1.12

Synthesis Procedure:

Poly(styrene-*b*- methacrylic acid) is prepared by living anionic polymerization with sequence addition of styrene followed by *t*-butyl methacrylate. The obtained polymer is hydrolysed in the presence of acid as catalyst. The reaction scheme is shown below:



3. Hydrolysis of tert.butyl ester: \longrightarrow PSt-*b*-Methacrylic acid

Characterization:

An aliquot of the polystyrene block was terminated before addition of *t*-butyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from ¹H-NMR spectroscopy or on line SEC with light scattering detectors. Block copolymer PDI is determined by SEC.

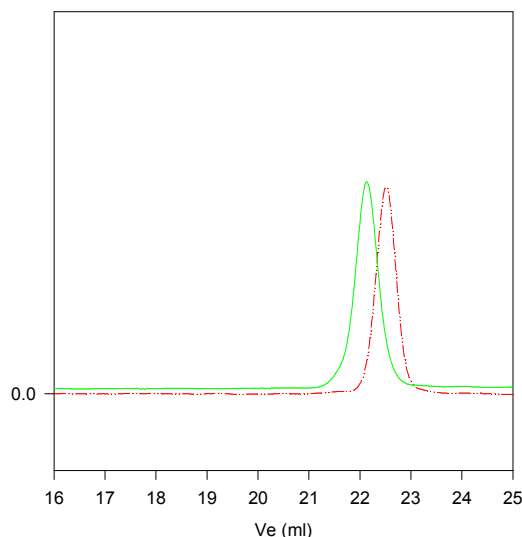
The hydrolysis of the tert. butyl ester to acid was followed by FT-IR spectroscopy by disappearance of characteristic absorbance at 1362cm⁻¹ of tert.butyl group.

Solubility:

Poly(styrene-*b*-methacrylic acid) is soluble in THF, dioxane and also in methanol (depending on the compositions with a short segment of polystyrene with long segment of poly meth acrylic acid). The polymers is precipitated out from ether, hexane.

SEC of the block copolymer:

P3752B-StBuMA Precursor for sample # P3752B-SMAA



Size exclusion chromatography of polystyrene-*b*-poly(*t*-butyl methacrylate)

--- Polystyrene, M_n=2500, M_w=2700, PI=1.08

— Block Copolymer PS(2500)-*b*-PtBuMA(25000), PI=1.12
After Hydrolysis of tert.butyl ester:
Mn: PS(2500)-*b*-PMAA(15500) Mw/Mn 1.12