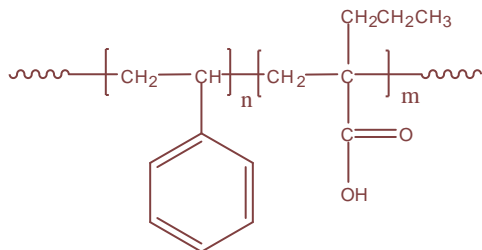


Sample Name: Poly(styrene-b-propylacrylic acid)

Sample #: P6385-SPrAA

Structure:

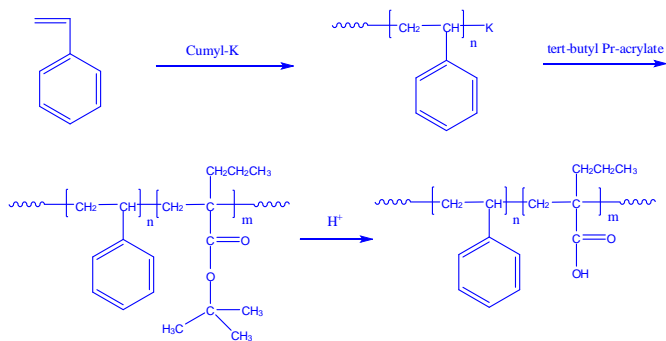


Composition:

Mn x 10 ³ PS-b-PPrAA	PDI
5.3-b-0.9	1.10

Synthesis Procedure:

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



Characterization:

An aliquot of the polystyrene block was terminated before addition of t-butyl propylacrylate 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.

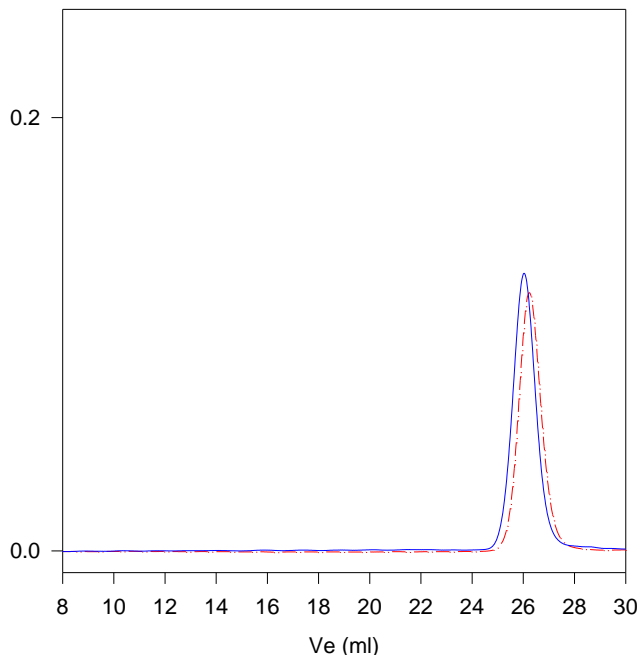
The hydrolysis of the tert. butyl ester to acid was followed by FT-IR spectroscopy by disappearance of characteristic absorbance at 1362cm⁻¹ of tert.butyl group.

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:

P6385-StBuPrA
(Precursor of P6385-SPrAA)



Size exclusion chromatography of poly(S-b-tBuPrA)

--- PS, M_n=5300, M_w=5800, M_w/M_n=1.10

— Poly(styrene-b-tert-butyl propylacrylate)

Mn: PS(5300)-b-PtBPrA(1400) M_w/M_n=1.10

After hydrolysis: PS(5300)-b-PPrAA(900)

NMR of the block copolymer:

