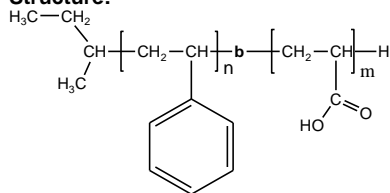


Sample Name: Poly(styrene -b- acrylic acid)

Sample #: P18743A-SAA

Structure:



Composition:

Mn x 10 ³ PS-b-PAA	PDI
16.5-b-42.0	1.14

Synthesis Procedure:

Poly(styrene-b-acrylic acid) is prepared by living anionic polymerization with sequence addition of styrene followed by t-butyl acrylate and hydrolysis of the t-butyl group.

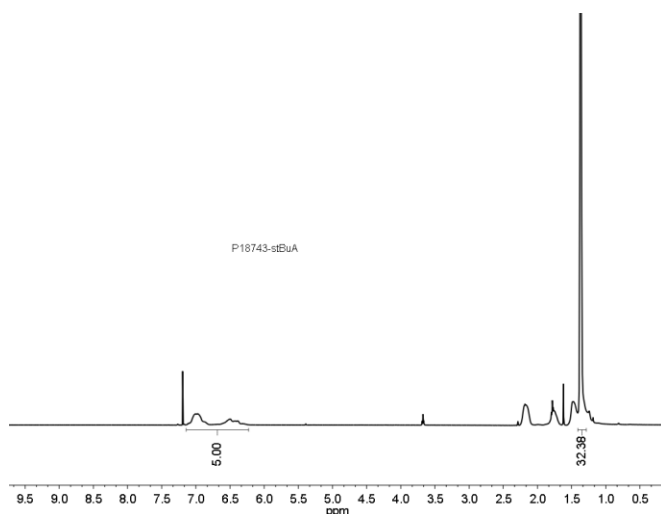
Characterization:

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 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-acrylic 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 acrylic acid). The polymers is precipitated out from ether, hexane.

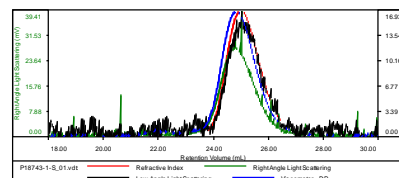
H NMR for the polymer:



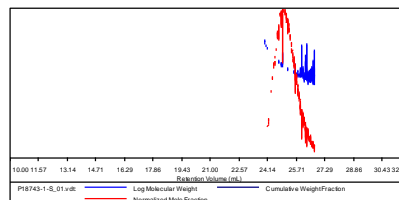
SEC for the sample :

Sample ID: P18743-1-S

Concentration (mg/mL)	12.0769
Sample dil/dc (mL/g)	0.1850
Method File	PS80K-June14-2014-0001.vcm
Column Set	3x PL 1113-6300
Solvent	THF

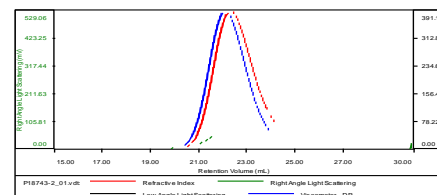


Sample	Mn	Mw	Mp	Mw/Mn	IV
P18743-1-S_01.vdr	16,544	17,904	16,964	1.082	0.0497

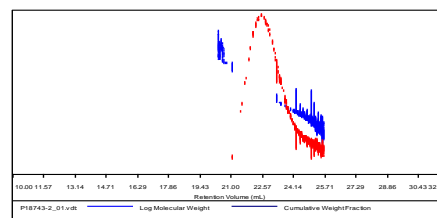


Sample ID: P18743-2-StBuA

Concentration (mg/mL)	46.3350
Sample dil/dc (mL/g)	0.0740
Method File	PS80K-June14-2014-0001.vcm
Column Set	3x PL 1113-6300
Solvent	THF



Sample	Mn	Mw	Mp	Mw/Mn	IV
P18743-2_01.vdr	91,965	105,140	110,926	1.143	0.1334



After Hydrolysis of tert.butyl ester Mn 16500-b-42,000

References for further information:

1. S. K. Varshney, R. Fayt, Ph. Teyssie, and J.P. Hautekeer US Patent 5,264,527 (1993)
2. Ph. Teyssie, R. Fayt, **S. K. Varshney**, and C. Jacobs Eur. Pat. Appl., Jan 16, 1991 *Eur.Pat.408420*
Patent Assignees- Atochem S.A France. CA. Vol 114, 26, 247998." Star Block Copolymers based on Acrylates and Methacrylates and their Manufacture process".
3. Ph.Teyssie, R. Fayt, and **S. K. Varshney**, *Eur. Pat. Appl. Dec. 12, 1990. Eur. Pat.402204*
Patent Assignees-Norsolor S.A. France. CA Vol 114, 20, 186314."Catalyst for the the Anionic Living Polymerization (Meth)acrylates".