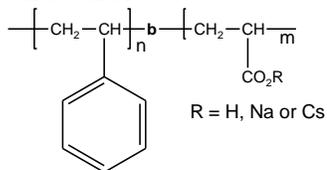


Sample Name: **Poly(styrene -b- Sodium acrylate)**

Sample #: **P2397-SAA**

Structure:

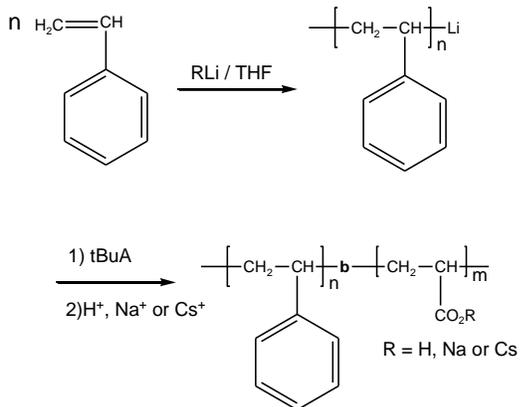


Composition:

| | |
|----------------------------------|------|
| Mn x 10 ³ PS-b-PAA | PDI |
| 1.5-b-44.0 | 1.13 |

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. The scheme of the reaction is illustrated below:



Characterization:

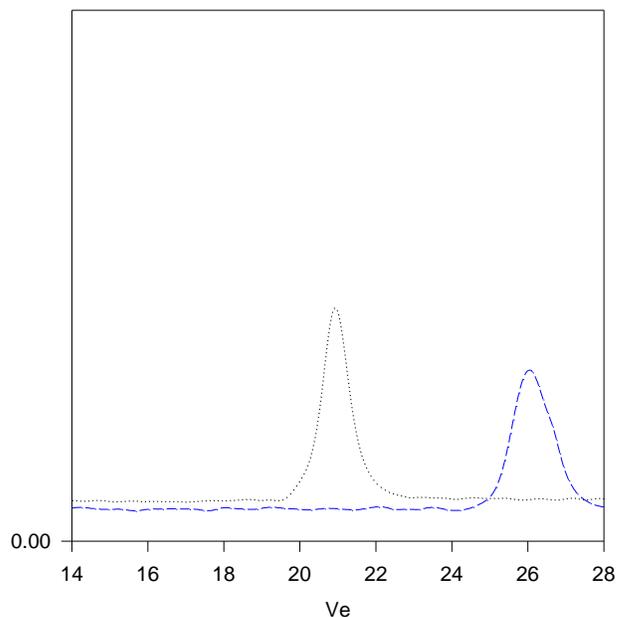
An aliquot of the polystyrene block was terminated before addition of t-butyl acrylate and analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The hydrolysis of the tert. butyl ester to acid was followed by FT-IR spectroscopy by disappearance of characteristic absorbance at 1362cm⁻¹ of tert.butyl group.

Solubility:

Poly(styrene-b-acrylic acid) is soluble in THF, DMF and its salt form swells in water depending on the compositions.

SEC of the block copolymer:

P2397-StBuA
(Precursor of P2397-SAA/Na)



Size Exclusion Chromatography :

- Polystyrene, M_n=1500, M_w=1750, M_w/M_n=1.16
- Block Copolymer PS(1500)-b-PtBuA(78100), M_w/M_n=1.13
- P2397-SAA: PS(1500)-b-PAA(44000), M_w/M_n = 1.13
- After Neutralization with NaOH:
Mn: 1500-b-57500 Mw/Mn : 1.13