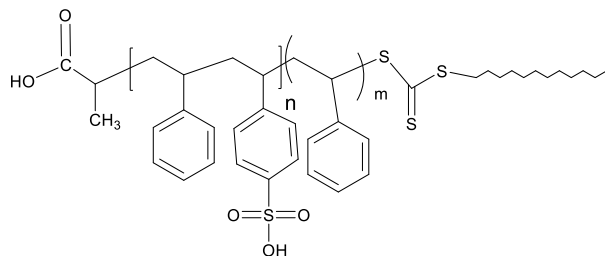


Sample Name:
Poly(styrene-co-Styrene sulfonic acid -b-Styrene)

Sample #: P42596C2-SSSO3Hran-b-S

Structure:

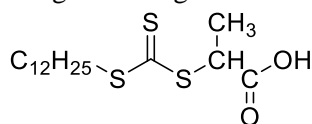


Composition:

Mn × 10 ³ SSSO3Hran-b-S	Mw/Mn (PDI)
41.5-b-40.0	1.57
Sulfonation in the first block	45.0 mole%

Synthesis Procedure:

The polymer is prepared by RAFT polymerization process using following RAFT reagent:



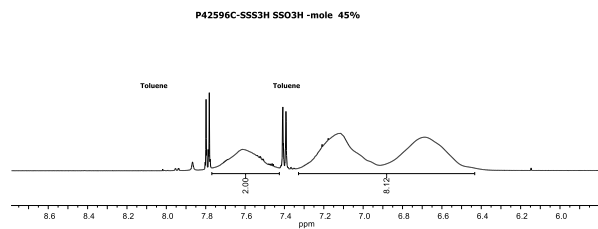
Characterization:

The product was characterized by size exclusion chromatography (SEC) and ¹H-NMR data analysis.

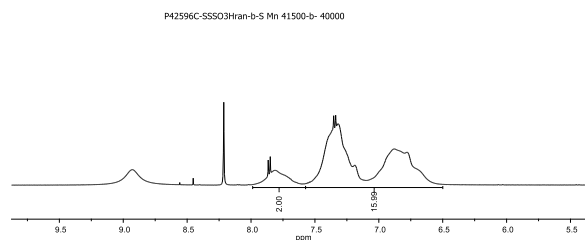
Thermal analysis:

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).

¹H-NMR spectrum of the Polymer SSSO3Hran in d6Acetone:

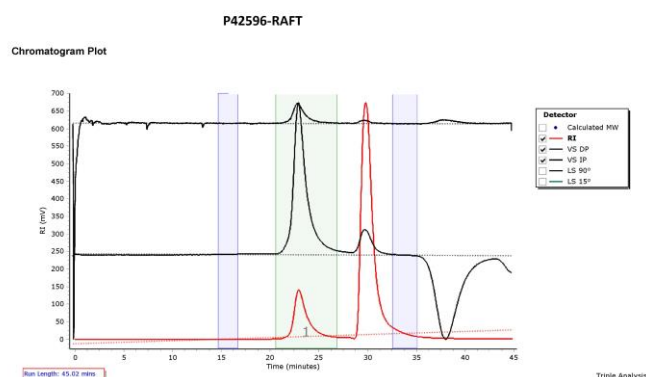


¹H-NMR spectrum of P42596C2-SSSO3Hran-b-S in DMF:



SEC profile of the PS-RAFT starting polymer:

Agilent GPC/SEC Software



Peak	Mp (g/mol)	Mn (g/mol)	Mw (g/mol)	Mz (g/mol)	Mz+1 (g/mol)	Mv (g/mol)	PD
Peak 1	34096	30953	31884	32723	33478	32687	1.03

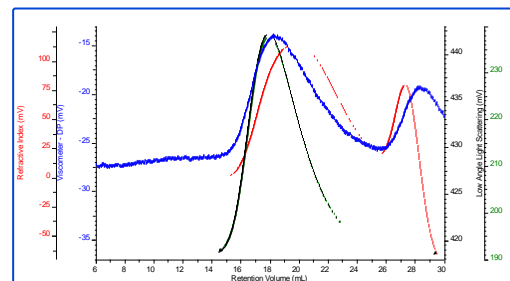
Production Parameters

45% sulfonation Mn 41,500

SEC profile after Extension of PS block:

P42596C2- SSSO3Hran-b-S

dn/dc	0.1677
Flow Rate	0.7000
Solvent	DMF with LiBr
Method	PSS column-PMMA60K-Jan3-2019-0013.vcm



Sample	Mn	Mw	Mp	Mw/Mn
P42596-C2_1_2020-08-18	81,165	127,925	108,070	1.576

Mn calculated from its HNMR composition. SEC profile demonstrate absence of First random block polymer.