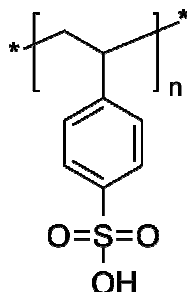


Sample Name: Poly (4-styrenesulfonic acid)

Synonym: Poly(4-vinylbenzenesulfonic acid)

Sample # P16177-SSO3H (dialyzed)

Structure:

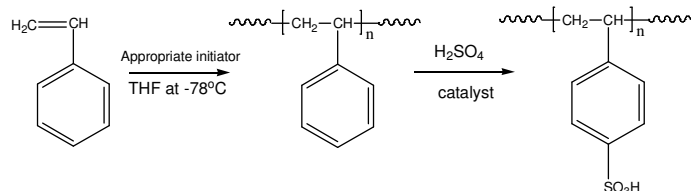


Composition:

$M_n \times 10^3$ (g/mol)	M_w/M_n
17.5	1.09
Degree of sulfonation:	94 %

Synthesis Procedure:

Poly(4-styrenesulfonic acid) was obtained by sulfonation of polystyrene that was prepared by anionic living polymerization. The reaction scheme is presented below.



Characterization:

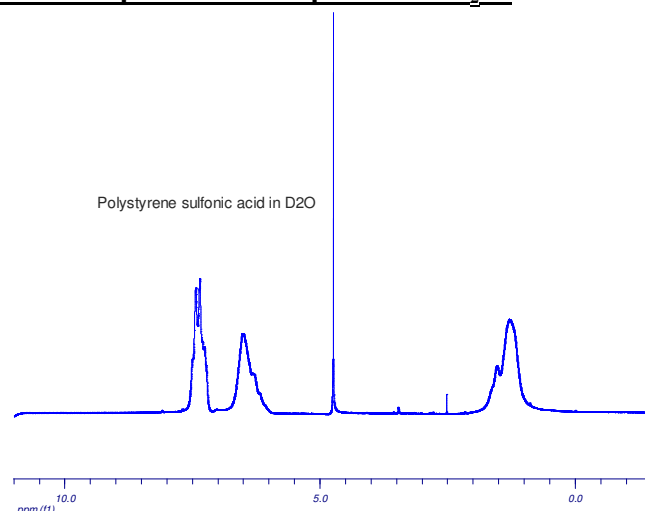
The molecular weight and polydispersity index (M_w/M_n) of poly(4-styrene sulfonic acid) were obtained by size exclusion chromatography (SEC). The molar mass distribution of the obtained poly(4-styrenesulfonic acid) remains the same as of the polystyrene precursor.

1H NMR and FT-IR spectra of the product show that sulfonation of phenyl group is predominately in *para* position. The degree of sulfonation was determined by elemental analysis.

Solubility:

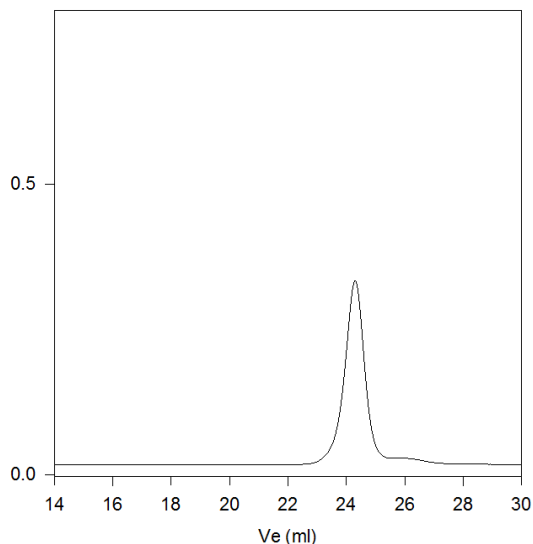
Poly(4-styrene sulfonic acid) is soluble in methanol, water, and it precipitates from hexane, THF, toluene.

1H NMR spectrum of the product in D_2O :



SEC elugram of the product in aqueous system:

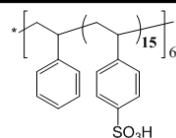
P16177-SSO3H



M_n : 17,500 M_w : 19,000 M_w/M_n = 1.09

Elemental analysis:

Identification de l'échantillon: P16177		Méthode utilisée: 170309E		
Formule moléculaire: (C8 H8 O3 S)n		Date d'analyse: 09-03-2017		
		Remarque: solide		
Sample Name	% Nitrogen	% Carbon	% Hydrogen	% Sulphur
POL12-1	0.00	50.28	5.60	16.69
POL12-2	0.00	49.69	5.55	16.86
	% Nitrogen	% Carbon	% Hydrogen	% Sulphur
Moyenne	0.00	49.69 - 50.28	5.58	16.78
Théorie:	0.00	52.16	4.38	17.41



Chemical Formula: $C_{128}H_{128}O_{45}S_{15}^{2-}$
Elemental Analysis:
C, 53.62; H, 4.50; O, 25.11; S, 16.77