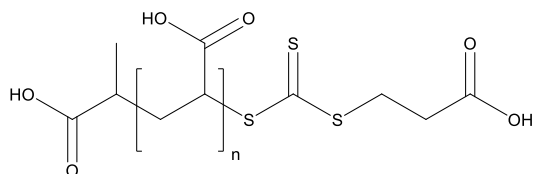


Sample Name:

Poly(acrylic acid) (by RAFT process)

Sample #: P14690-AA

Structure:

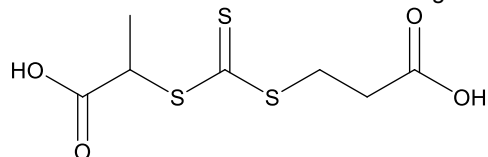


Composition:

M _n (g/mol)	PDI
192,000	1.37

Synthesis Procedure:

Polyacrylic acid was synthesized by RAFT polymerization of acrylic acid using 2,2'-azobis isobutyrate (CAS 2589-57-3) as initiator and xanthate as chain transfer agent:



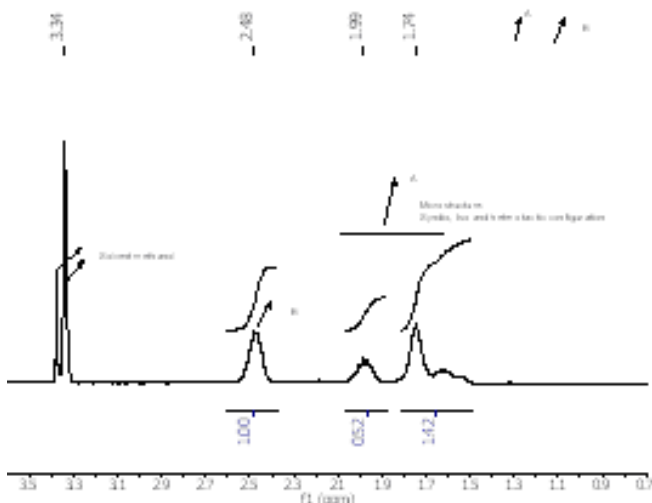
Poly(acrylic acid) synthesized was then converted to its sodium salt.

Solubility: Poly(acrylic acid) sodium salt is soluble in water.

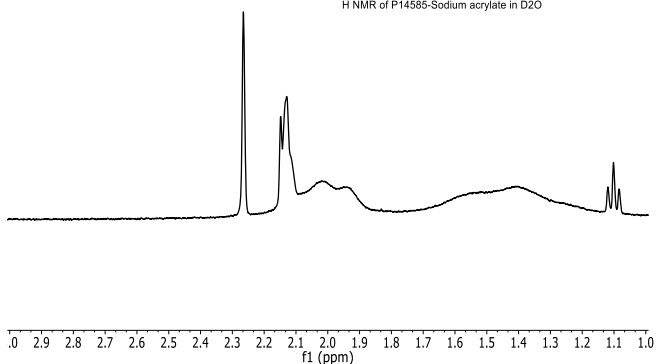
Characterization:

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in THF. For the analysis purposes of its molecular weights poly acrylic acid was converted to its n-butyl ester and characterized in THF on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Three SEC columns from Supelco (G6000-4000-2000 HXL) were used with dual detectors model 270 from Viscotek Co.

¹H NMR of the Polyacrylic acid in CD₃OD:



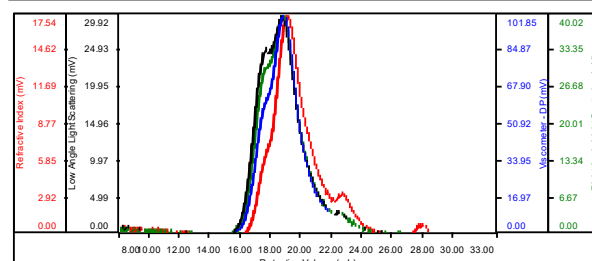
H NMR of P14585-Sodium acrylate in D2O



SEC:

To determine the molecular weight of PAA, it was converted to poly(n-butyl acrylate) (PnBuA). SEC was done using H₂O as an eluent in presence of aqueous buffer solution (NaHCO₃ 0.05 M, NaNO₃ 0.1 M, triethanolamine 0.02).

Concentration (mg/mL)	3.2846
Sample dn/dc (mL/g)	0.0850
Method File	PS80K-March7-2014-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	M _n	M _w	M _p	M _w /M _n	IV
P14690-nBuA_01(200).vdt	341,171	463,544	380,645	1.359	1.6251

References:

1. Ph. Teyssie, Ph. Bayard, R. Jerome, **S. K. Varshney**, and J. S. Wang, *35th IUPAC International Union of Pure & Applied Chemistry International Symposium on Macromolecules* 1994, 67.
2. R. Fayt, R. Forte, C. Jacobs, R. Jerome, T. Ouhadi, Ph. Teyssie and **S. K. Varshney**, *Macromolecules*, 1987, 20, 1442-1444.
3. Jerome, R. Forte, **S. K. Varshney**, R. Fayt, and Ph. Teyssie, "The Anionic Polymerization of Alkylacrylates: A Challenge" in the Recent Advances in Mechanistic and Synthetic Aspects of Polymerization: M. Fontanille and A. Guyot Ed., NATO ASI Series C 215, 101 (1987), *CA Vol. 108*, 12, 094992.
4. Ph. Teyssie, R. Fayt, C. Jacobs, R. Jerome, L. Leemans, and **S. K. Varshney** *Am. Chem. Soc., Polym. Prepr.* 1988, 28 (2), 52-53.