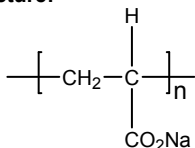


**Sample Name:**  
**Poly(acrylic acid) sodium salt (by RAFT process)**  
**Sample #: P14585-ANA**

**Structure:**



**Composition:**

Mw x 10 <sup>3</sup>	PDI
430.0	1.07

**Synthesis Procedure:**

Poly(acrylic acid) is synthesized by RAFT process and then converted to its sodium salt.

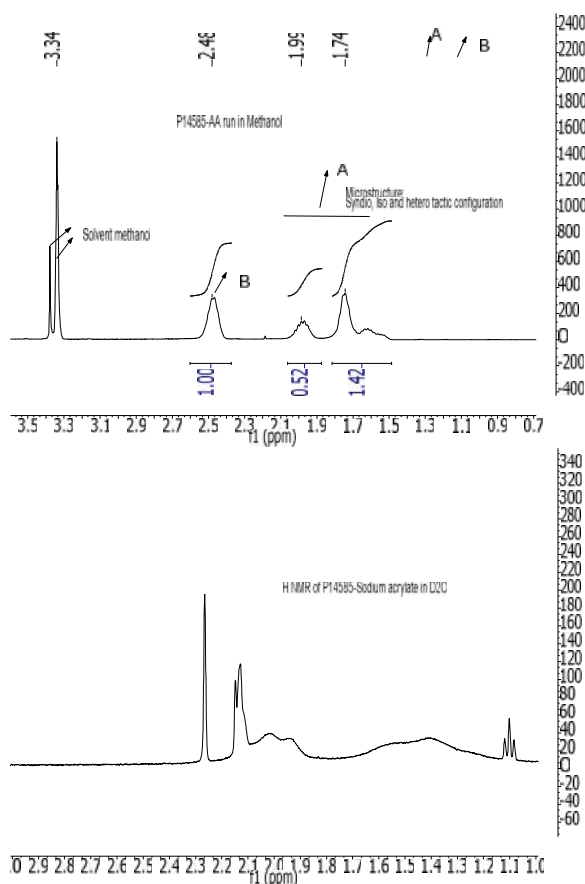
**Characterization:**

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.

**Solubility:**

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

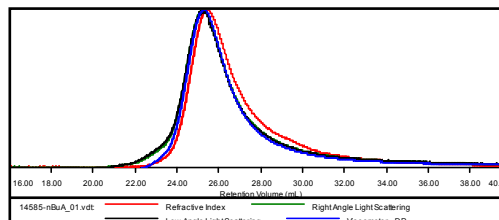
**HNMR of the Poly acrylic acid run in CD3OD:**



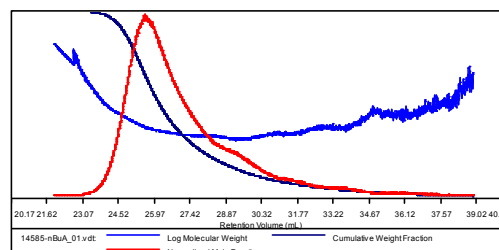
**SEC of Homopolymer Precursor for the Sodium salt**  
**SEC of the Poly n Butyl acrylate after converting PAA to**  
**PnBuA for the determination of its molecular weights**

**Sample ID: P14585-nBuA**

Concentration (mg/mL)	5.5955
Sample dn/dc (mL/g)	0.0640
Method File	PS80K-Apr-2013-0000.vcm
Column Set	3x PL 1113-6300
System	System 1



Sample	Mn	Mw	Mp	Mw/Mn	IV
14585-nBuA_01.vdt	546,894	586,086	585,596	1.072	2.3078



**Poly acrylic acid Mn on the basis of above characterization:**

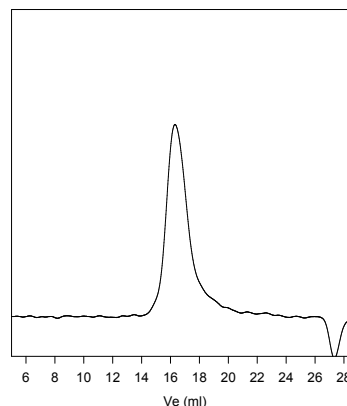
**Mn 307,000 Mw/Mn 1.07**

**Its sodium salt form: Mn 402,000 Mw: 430,000**

**SEC analysis in H2O using an aqueous**

**buffer (NaHCO3 0.05 M, NaNO3 0.1 M, triethanolamine 0.02**

**P14585-AA (SEC in water at 60 oC)**



Size Exclusion Chromatography of the polymer:

PAA: Mn 307,000 Mw/Mn 1.07

**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