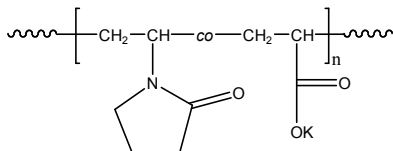**Sample Name: Poly(N-vinylpyrrolidone -co-acrylic acid)**

Sample #: P14462-VPAAran
Structure:

Composition:
Comments Column: PAA (mole%)

Mn x 10³ P(VP-co-AA)	PDI	Comments (mole%)
79.0	1.12	80
With respect to Pos sreference: 788.0		
Tg for the random polymer	230ºC	

Synthesis Procedure:
Poly(N-vinylpyrrolidone -co- acrylic) is prepared by RAFT radical polymerization with N-vinylpyrrolidinone and Acrylic acid .

Characterization:
Polymer was analyzed by size exclusion chromatography (SEC) in DMF at 60 oC to obtain the molecular weight, polydispersity index (PDI) of the composition.
Molecular weight with respect to Polystyrene was found much higher then expected. Therfore Poly methacrylic acid standards were used to obtain moleculer weight
Note: The calculation of the composition bases on the FTIR standard fit line obtained from polymers that have known composition. The random copolymer composition was calculated from FTIR and NMR. The Mn of Poly(N-vinylpyrrolidone -co- potassium acrylate) was calculated from Poly(N-vinylpyrrolidone -co- t-butyl acrylate)

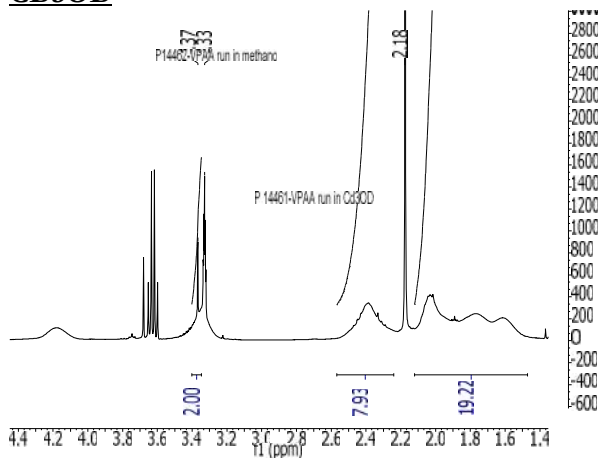**FTIR standard line for composition calculation:**
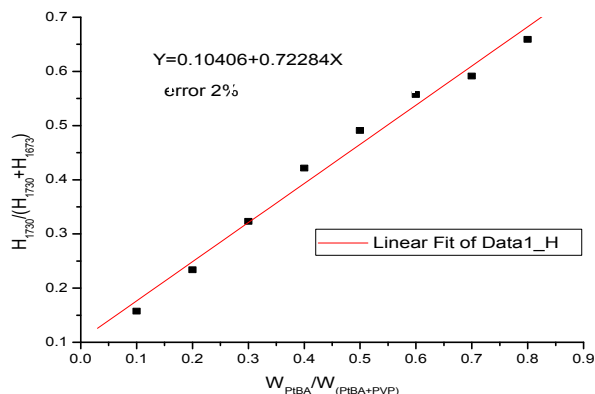
Thermal analysis:
Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20ºC/min.The midpoint of the slope change of the heat flow plot of the second heating scan was considered as the glass transition temperature (Tg).
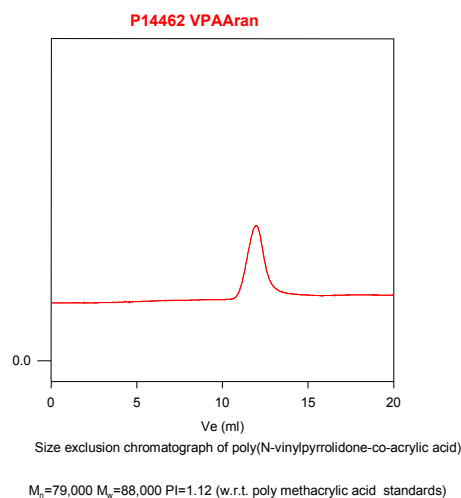
Solubility:
Poly(N-vinylpyrrolidone -co- acrylic acid) is soluble in methanol, ethanol, water, DMF.

¹H-NMR Spectrum of the random copolymer run in CD3OD

SEC of the block copolymer before hydrolysis:

Size exclusion chromatograph of poly(N-vinylpyrrolidone-co-acrylic acid)

M_n=79,000 M_w=88,000 PI=1.12 (w.r.t. poly methacrylic acid standards)

DSC thermogram for the sample: