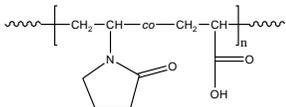


Sample Name: Poly(N-vinylpyrrolidone -co- acrylic acid)

Sample #: P7034A-VPAAran

Structure:



Composition:

Mn x 10 ³ P(VP-co-AA)	PDI	PAA (mol%)
56.9	3.5	53
T _g for the sample 155°C		

Synthesis Procedure:

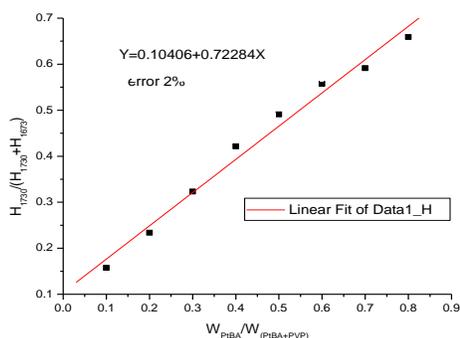
Poly(N-vinylpyrrolidone -co- acrylic acid) is prepared by radical polymerization with N-vinylpyrrolidinone and t-butyl acrylate followed by hydrolysis of the t-butyl group.

Characterization:

Poly(N-vinylpyrrolidone -co- t-butyl acrylate) was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight, polydispersity index (PDI) of. The random copolymer composition was calculated from FTIR and NMR. The PDI of final polymer was determined by SEC of poly(N-vinylpyrrolidone -co- t-butyl acrylate).

Note: The calculation of the composition bases on the FTIR standard fit line obtained from polymers that have known composition.

FTIR standard line for composition calculation:



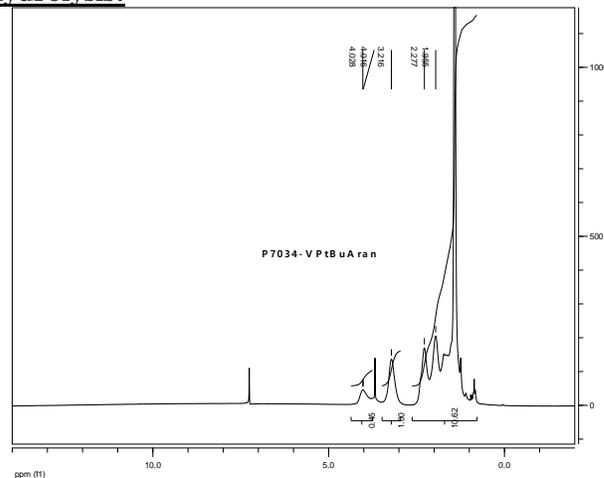
Thermal analysis:

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 20°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).

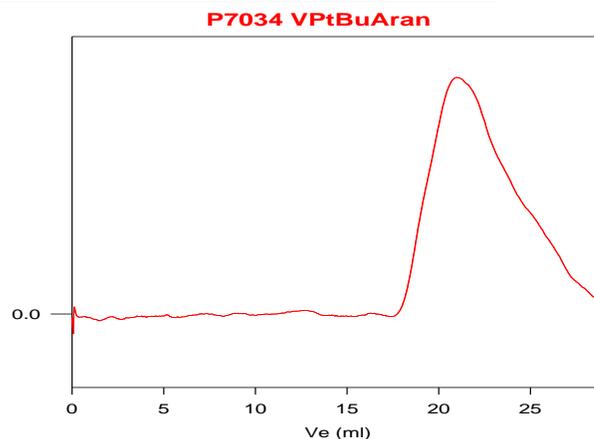
Solubility:

Poly(N-vinylpyrrolidone -co- acrylic acid) is soluble in water. It precipitated from hexane and ether, then dialyzed and freezing dried.

¹H-NMR Spectrum of the copolymer before hydrolysis:



SEC of the copolymer before hydrolysis:



Size exclusion chromatograph of :
Poly(N-vinylpyrrolidone-co-t-butyl acrylate)
M_w=269000, M_n=75600 PI=3.5 (w.r.t. polystyrene standards)
after hydrolysis M_w=199000, M_n=56900

DSC thermogram for the sample:

