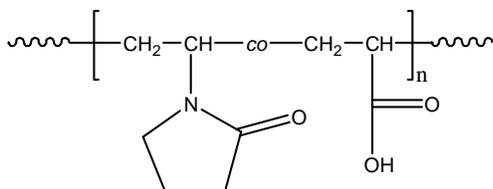


Sample Name:**Poly(N-vinylpyrrolidone -co- acrylic acid)****Sample #: P14464-VPAAran****Structure:****Composition:**

$M_n \times 10^3$ P(VP-co-AA)	PDI	AA (mol%)
60.0 (with respect to polystyrene ref.: 642.0)	1.2	60.0
T_g	230°C	

Synthesis Procedure:

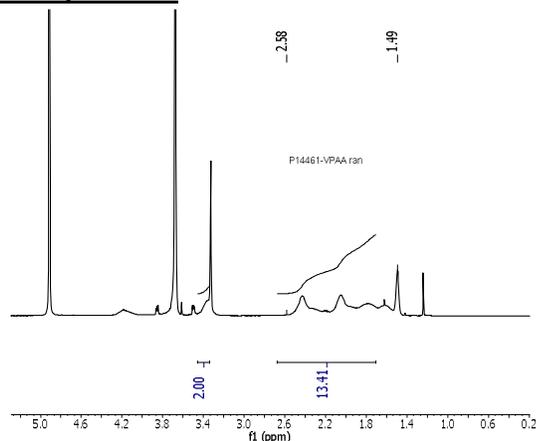
Poly(N-vinylpyrrolidone -co- acrylic) was prepared by RAFT radical polymerization with N-vinylpyrrolidinone and acrylic acid.

Characterization:

Polymer was analyzed by size exclusion chromatography (SEC) in DMF at 60°C to obtain the molecular weight, polydispersity index (PDI) of the composition.

Molecular weight with respect to polystyrene was found much higher than expected. Therefore, poly methacrylic acid standards were used to obtain molecular weight

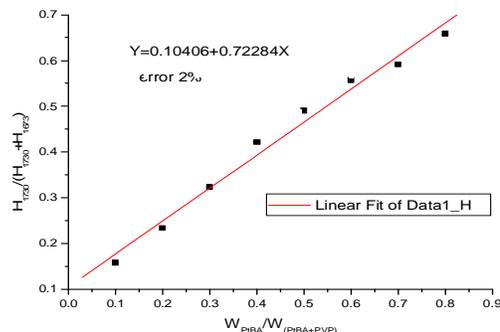
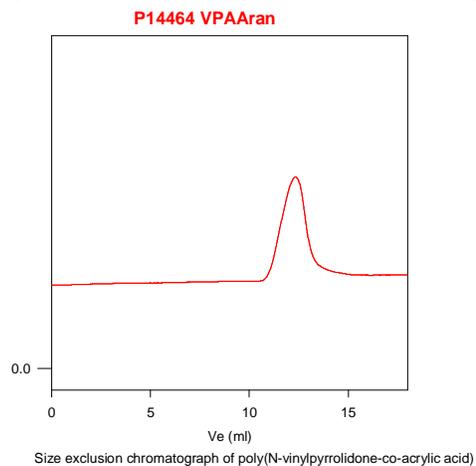
Note: The calculation of the composition bases on the FTIR standard fit line obtained from polymers that have known composition. The random copolymer composition was calculated from FTIR and NMR. The M_n of poly(N-vinylpyrrolidone -co- potassium acrylate) was calculated from poly(N-vinylpyrrolidone -co- t-butyl acrylate).

¹H-NMR spectrum:**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 methanol, ethanol, THF, water, DMF.

FTIR standard graph for composition calculation:**SEC elugram of the copolymer before hydrolysis:**

$M_n=60,000$ $M_w=72,000$ $PI=1.2$ (w.r.t. poly methacrylic acid standards)

DSC thermogram of copolymer: