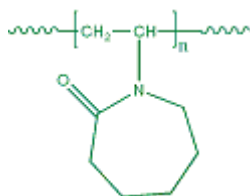


Sample Name: **Poly(N-vinyl caprolactam)**

Sample # **P4364B-NVCL**

Structure:



Composition:

$M_v \times 10^3$ Viscosity Average Molecular weight	PDI
1.8	1.3 (from SEC in DMF)

Synthesis Procedure:

Polymer is obtained by free radical polymerization using AIBN as free radical initiator.

Characterization:

The molecular weight and polydispersity index (PDI) are obtained by size exclusion chromatography (SEC) in DMF. SEC analysis was performed 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 triple detectors from Viscotek Co.

Solution Viscosity:

The viscosity average molar masses (M_v), is determined from the intrinsic viscosity employing the Mark-Houwink relation $[\eta] = KM^\alpha$ with $K = 0.0105$ ml/g and $\alpha = 0.69$ Ref: Krish, Yu E. Yanul N A, Kalninish K.K. Eur. Polym., J. 1999, 35, 305.

Purification of the Polymer:

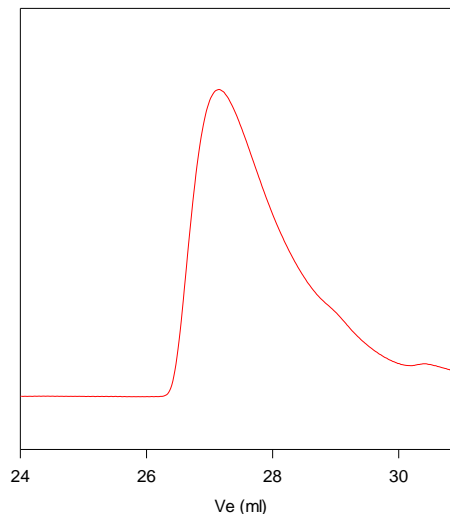
Polymer was purified after dissolving in water (distilled) and adding acetone (acetone to water = 3:7). At room temperature a clear solution is formed. The solution warm up to $\approx 80^\circ\text{C}$ the product separated out. This was repeated at least three times to ensure the removal of un-reacted vinyl caprolactam monomer from the polymer. The obtained polymer was dried and than re-dissolved in de-ionized water and freeze dried.

Thermal analysis of the samples was carried out using a differential scanning calorimeter (TA Q100) at a heating rate of $10^\circ\text{C}/\text{min}$. The inflection

glass transition temperature (T_g) has been considered.

SEC of Homopolymer:

P4364B-NVCL



Size exclusion chromatography of poly(N-Vinyl caprolactam):
 $M_w = 1800$, $M_n = 1300$, $M_w/M_n = 1.3$
 dn/dc : in THF at 30°C : 0.072 ml/g