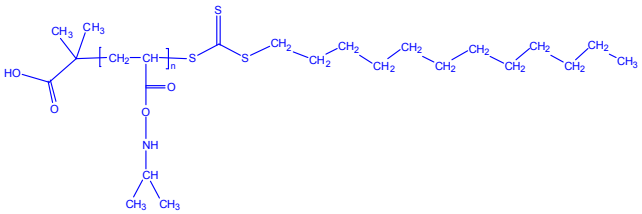
Sample Name: **COOH end terminated Poly(N-isopropyl acrylamide) of Narrow molecular weights distribution**

Sample #: **P10511-I-NIPAMCOOH**

Structure:



Composition:

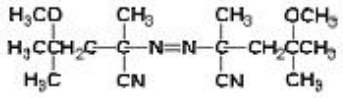
Mn x 10^3	PDI
150.0	1.36
Mv: 220.0	

Synthesis Procedure:

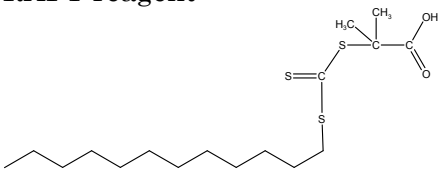
COOH end functionalized poly(N-isopropyl acrylamide) is obtained by RAFT polymerization process.

The following catalyst was used:

2,2'-Azobis(4-methoxy-2,4-dimethylvaleronitrile)



RAFT reagent:



2-dodecylsulfonyl-2-methylpropionic acid

Characterization: The molecular weight and polydispersity index (PDI) were obtained by size exclusion chromatography (SEC) in THF and in DMF. SEC analysis was performed on a Varian liquid chromatograph equipped with refractive and UV light scattering detectors. Two SEC columns from Supelco (G6000-4000 HXL) were used with triple detectors from Viscotek Co.

Sample Preparation: Polymer sample for the GPC were prepared as reported in the literature (**Macromolecules, 2000,33,6738).** To avoid the effect of concentration and the amount of water present in the sample, on line triple detectors were used.

Viscosity measurement was carried out in a Ubbelohde viscometer at 25°C. Four solutions in methanol of different concentrations were measured. The intrinsic viscosity was obtained by extrapolation to c=0. From viscosity-molecular weight relationship $[\eta]= 2.99\times10^{-2} M^{0.64}$ (Makromolecular Chem. V180, P969, 1979), the viscosity average molecular weight was calculated accordingly.

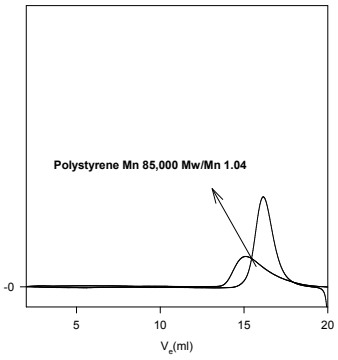
DMF as eluent at 60 °C elution temperature was found efficient to avoid any adsorption of polymer with the packing material of column. DMF containing LiBr as an additive was found efficient to avoid any adsorption effect of polymer. It was observed 0.05 to 0.1 M solution of LiBr in DMF was efficient to analyse polymer. In pure DMF with out any additive the molecular weight was found higher and Mw/Mn was broad.

Purification of polymer:

Unreacted monomer was removed by dissolving the product in cold water than warming the solution. The polymer separated out. This procedure was applied 2 times to remove the unreacted monomer. The obtained polymer was dissolved in acetone and fractionated from Hexane. After several fractionation to remove the low molecular weight fraction < 10% and to obtain fairly narrow molecular weight fraction polymer. Polymer was finaly reprecipitated in cold hexane and dried at room temperature.

SEC of the Polymer carried out in DMF

P10511-I-NIPAMCOOH



Size exclusion chromatography of N-Isopropyl Acrylamide in DMF/LiBr(0.05M)
Molecular Weight Distribution with respect to Polystyrene Standards:
Mn: 150,000 Mw: 204,000 M_w/M_n= 1.36

Thermogram for the sample