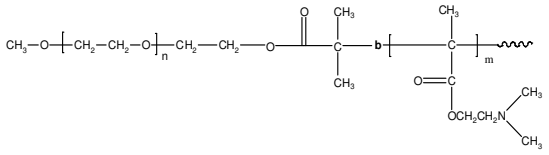
Sample Name: **Poly (ethylene oxide-b-2-(dimethylamino) ethyl methacrylate)**

Sample #: **P19597D-EODMAEMA**

Structure:



Composition:

Mn x 10^3 PEO-b-PDMAEMA	PDI
2.0-b-5.0	1.18

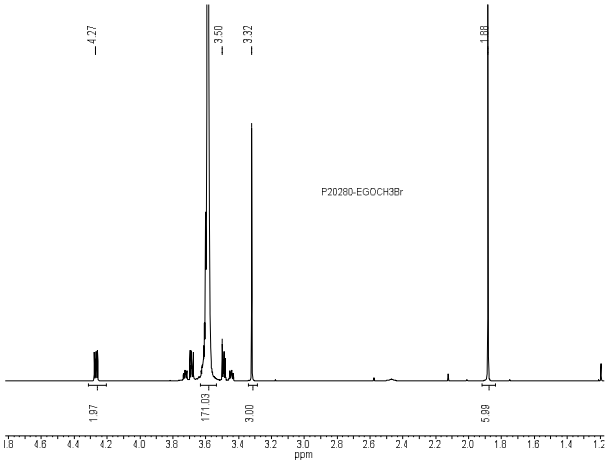
Synthesis Procedure:
Poly [ethylene oxide–b-2-(dimethylamino) ethyl methacrylate] is prepared by living anionic polymerization of ethylene oxide followed by control radical process for 2-(dimethyl amino) ethyl methacrylate polymerization.

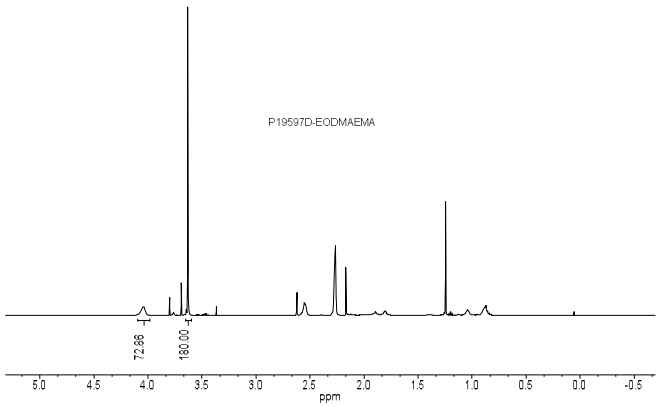
Characterization:
The polymer was characterized by SEC and ^{1}H NMR.

Purification of the polymer and removal of any un-reacted homopolyethylene oxide from the diblock copolymer:
Polymer dissolved in water and the pH of the medium increased to about 13 by addition of NaOH. The polymer precipitated out by warming the solution at 80^{o}C. The process was repeated twice to remove homo PEO completely. The obtained polymer dissolved in methanol and pH was adjusted to about 8 by adding HCL and filtered. The solvent was removed by rota-evaporator. The highly viscous solution was cold precipitated by hexane/ether mixture and finally dried under vacuum at 40^{o}C.

Solubility:
The polymer is soluble in water.

^{1}H-NMR Spectrum of the Macroinitiator :





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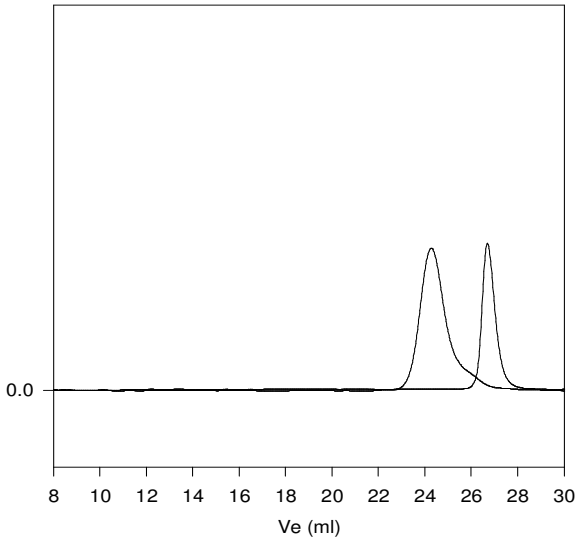


Size exclusion chromatography of the product

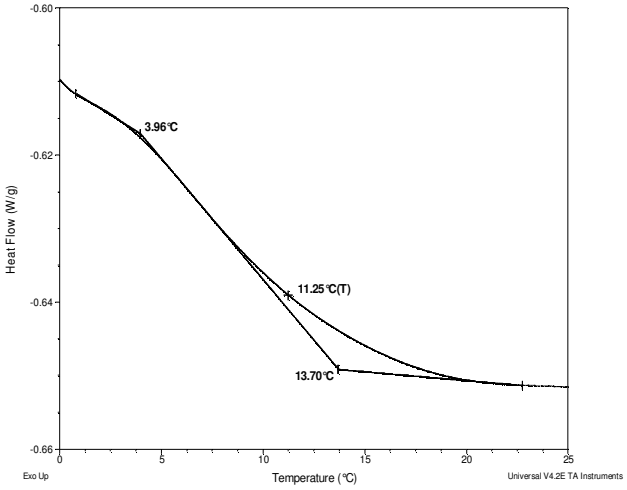
—— PEO, M_n=2,000, M_w=2,100, Mw/Mn=1.05

—— Poly(ethylene oxide-b-N,N-dimethylaminoethylmethacrylate)

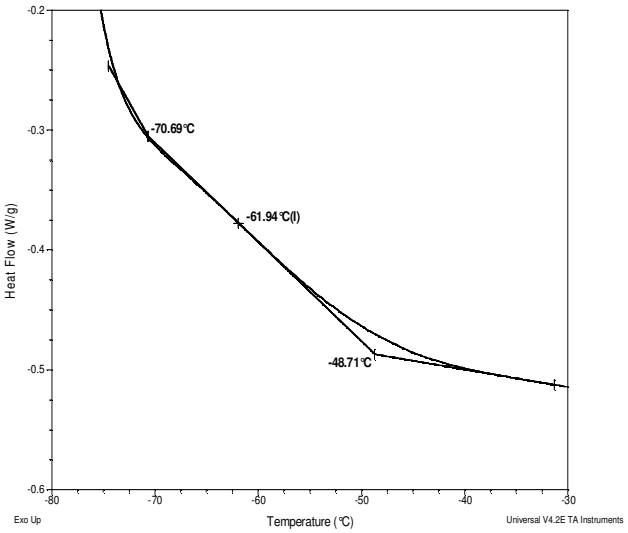
Mn: PEO(2,000)-b-DMAEMA(5,000) Mw/Mn=1.18

Thermograms for the sample

For DMAEMA block



For PEO block



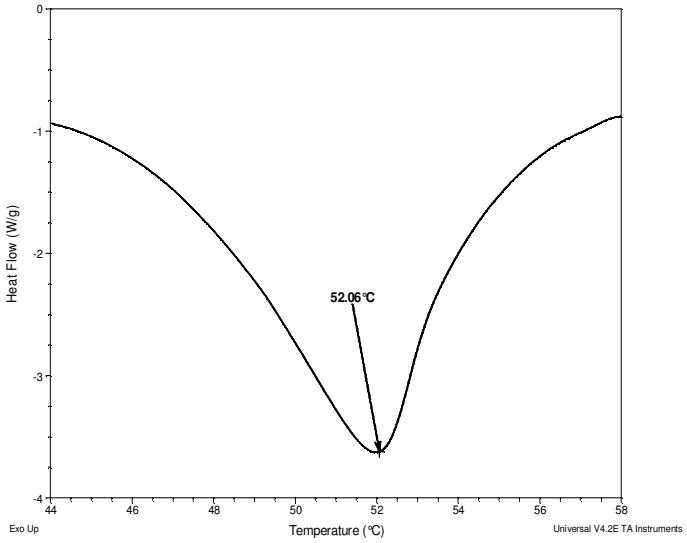
Thermal analysis results at a glance

For DMAEMA block		
T_g: 11°C	T_m: -	T_c: -
For PEO block		
T_g: -62°C	T_m: 52°C	T_c: 16°C

Melting and crystallization curve for the sample

The melting temperature (T_m) was taken as the maximum of the endothermic peak where as the crystallization temperature (T_c) was considered as the minimum of the exothermic peak. The T_c was calculated during **cooling ramp**.

Melting curve for PEO block



Crystallization curve for PEO block