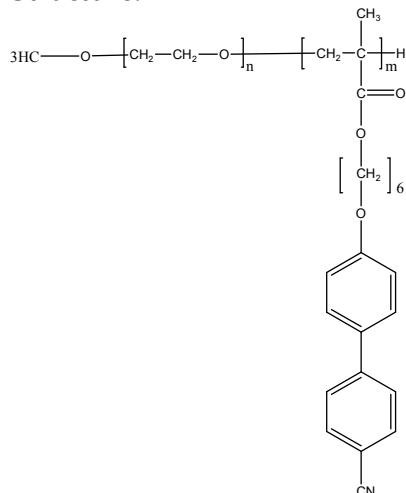


Poly(ethylene oxide-*b*-6-(4'-cyanobiphenyl-4-yloxy)hexyl methacrylate

Structure:



Mn x 10 ³ PEO-b-4CNBPHEMA	PDI
5.0-b-6.0	1.09

Polymer is synthesized by ionic polymerization process.

The un-reacted PEG can be removed by stirring the polymer in hot water/Methanol. The obtained polymer dissolved in CHCl_3 /toluene and pass through the column packed with silica. The polymer was recovered by precipitation in cold ether/hexane mixture.

Polymer is soluble in CHCl₃, THF and toluene.
The polymer precipitated out from hexane.

1H NMR spectrum of P9545C-EG4CNBPMA in CDCl₃. The spectrum shows peaks in the aromatic region (7.0-7.8 ppm) and aliphatic region (1.0-2.5 ppm). Integration values are provided below the peaks.

Chemical Shift (ppm)	Integration
7.75 (d)	1.68
7.65 (d)	3.98
7.45 (d)	7.04
7.35 (d)	4.27
7.25 (d)	3.00
2.4 (m)	-
1.8 (m)	-
1.4 (m)	-
1.1 (m)	-

A chromatogram plot showing detector response versus elution volume (V_e in ml). The x-axis is labeled V_e (ml) and has major tick marks at 5, 10, 15, 20, and 25. The y-axis has a '0' mark. Two peaks are visible, both centered at approximately 24 ml. The upper peak is much taller and sharper than the lower peak. The baseline is stable and near zero across the entire range from 5 to 25 ml.

—— Poly(ethylene oxide), $M_n=5000$, $M_w=5300$, $PI=1.05$
 —— Block Copolymer PEO(5000)-b-4-CNBPHMA (6000), $PI=1.09$

Thermal analysis of the P9545C- EO4CNBPHMA

Thermal analysis of the samples was carried out on a TA Q100 differential scanning calorimeter at a heating rate of 10°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).

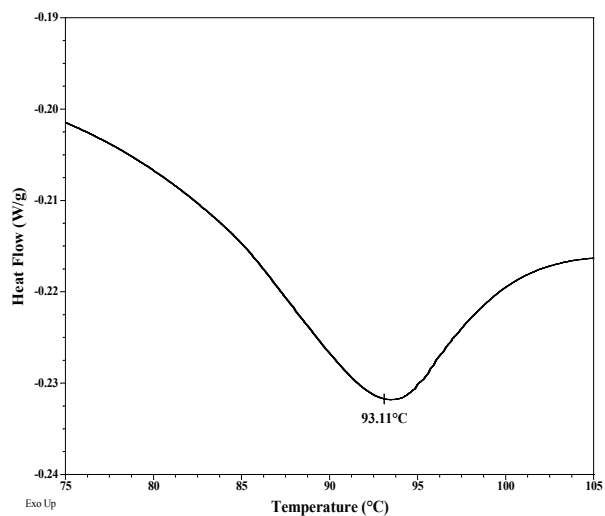
Melting and crystallization curve for the sample

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.

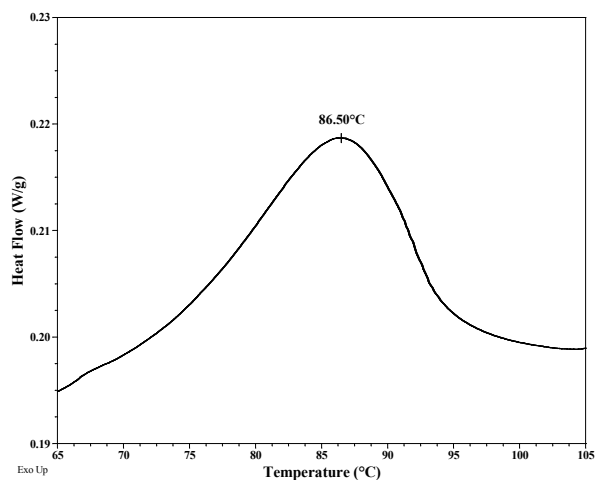
Typical thermal analysis results at a glance:

Sample	T_m (°C)	T_c (°C)	T_g (°C)
EO	38	-14	-20
4CNBPHMA	93	87	-

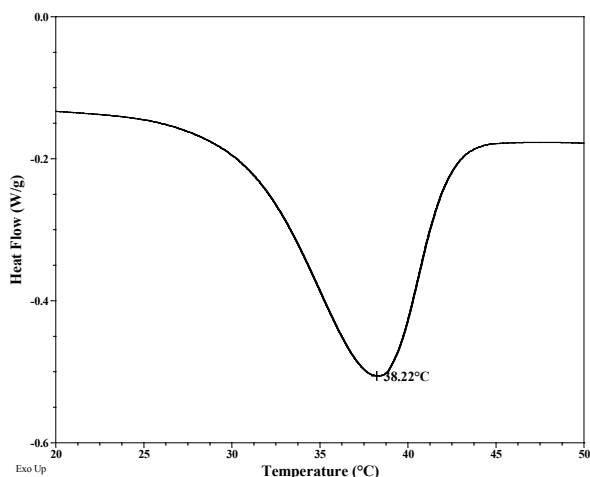
Melting curve for EO4CNBPHMA



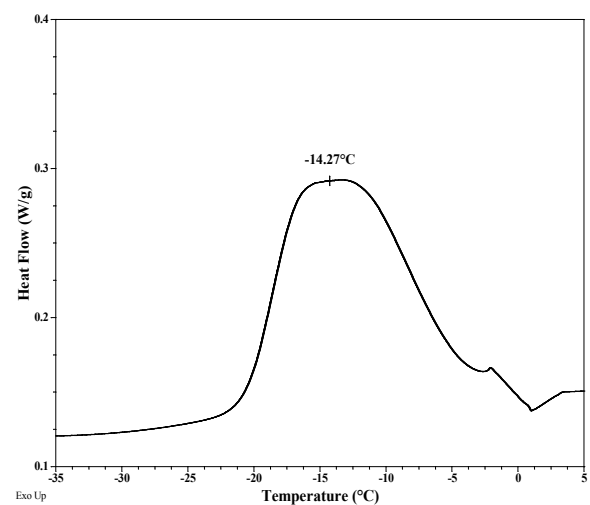
Crystallization curve for EO4CNBPHMA



Melting curve for PEO block:



Crystallization curve for PEO block:



Thermogram for PEO block:

