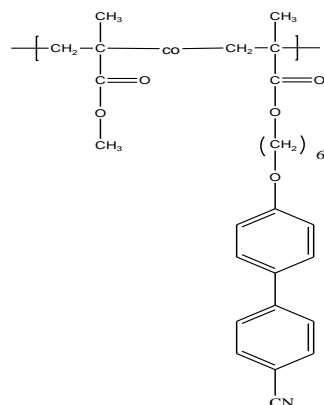


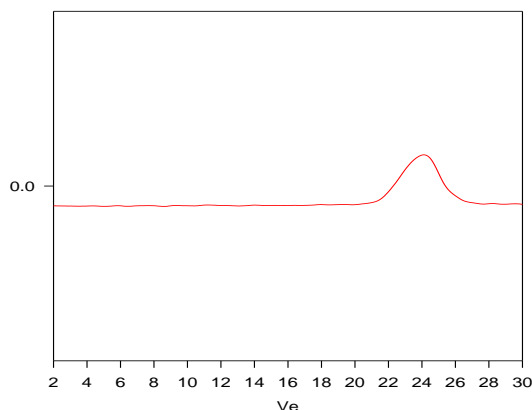
**Sample Name:**

Poly(Methylmethacrylate-co-6-(4'-cyanobiphenyl-4-yloxy)hexylmethacrylate)

**Sample #:** P8963-MMA4CNBPHMAran

**Structure:****SEC of the Polymer:**

**P8963-MMA4CNBPHMAran**



Size Exclusion Chromatography of Poly(MMA-co-4CNBPHMA):

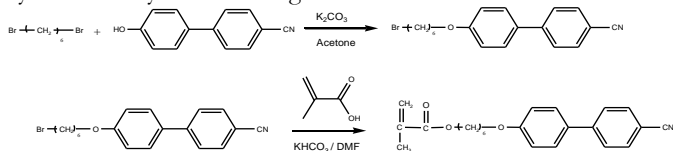
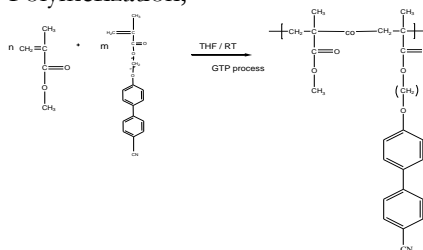
$M_n = 21500$ ,  $M_w = 34500$ ,  $M_w/M_n \approx 1.6$

**Composition:**

$M_n \times 10^3$	$M_w/M_n$ (PDI)
21.0	1.6
$T_g$ for the random polymer ( $^{\circ}\text{C}$ )	107

**Synthesis Procedure:**

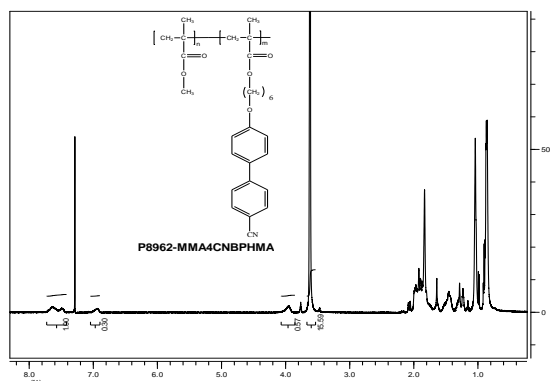
Poly(methylmethacrylate-co-6-(4'-cyanobiphenyl-4-yloxy) random copolymer is prepared by GTP-polymerization of MMA and 6-(4'-cyanobiphenyl-4-yloxy)hexylmethacrylate mixture in THF. 6-(4'-cyanobiphenyl-4-yloxy)hexylmethacrylate monomer is synthesized by the following routes:

**Polymerization;****Characterization:**

Polymer was analyzed by size exclusion chromatography (SEC) to obtain the molecular weight and polydispersity index (PDI). The final block copolymer composition was calculated from  $^1\text{H}$ -NMR by comparing the peak area of the MMA protons near 3.6 ppm with the 4CNBPHMA protons at about 7.5 ppm. (biphenyl protons).

**Solubility:** The polymer is soluble in THF, chloroform and toluene. It is precipitated in methanol.

**Thermal analysis:** Thermal analysis was carried out on a TA Q100 differential scanning calorimeter at a heating rate of  $10^{\circ}\text{C}/\text{min}$ .

 **$^1\text{H}$  NMR spectrum of the sample:****DSC thermogram for copolymer:**