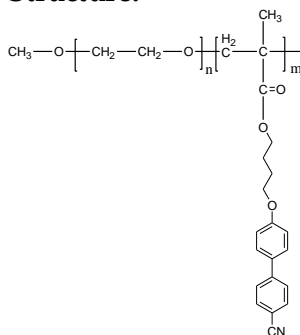


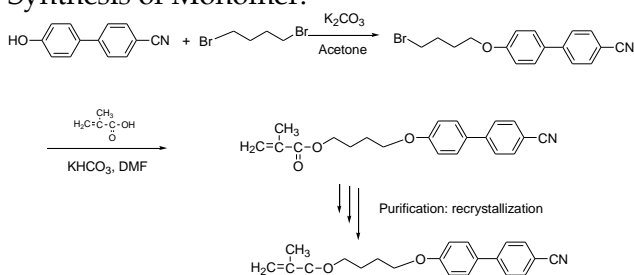
**Sample Name:**

Poly[ethylene oxide-b-4-(4'-cyanobiphenyl-4-yloxy) butyl methacrylate]

Sample #: P1126B-EO4CNBPButylMA

**Structure:****Composition:**

Mn x 10 <sup>3</sup> PEO-b-4CNBPButylMA	PDI
3.0-b-11.0	1.25

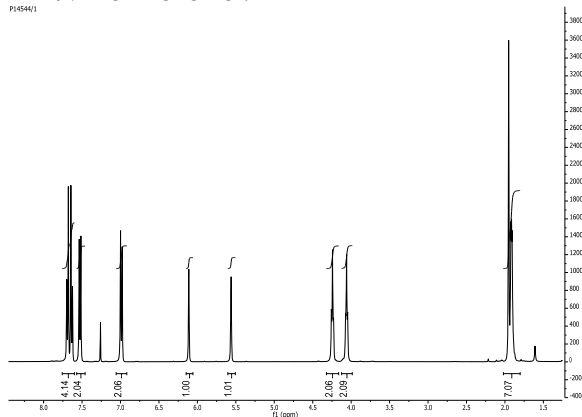
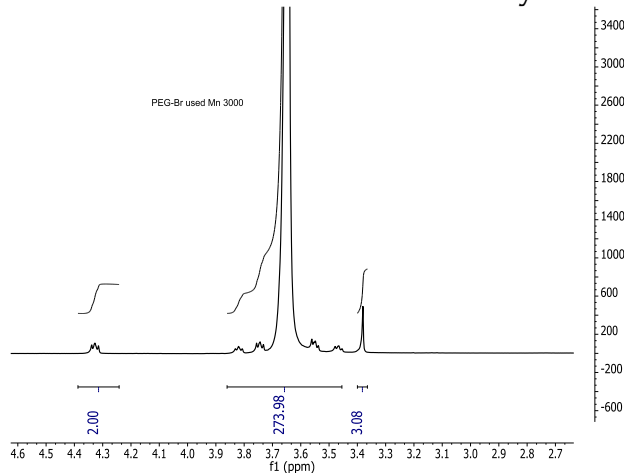
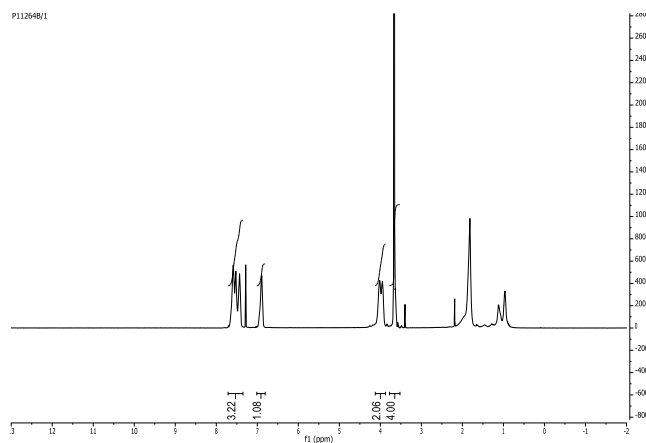
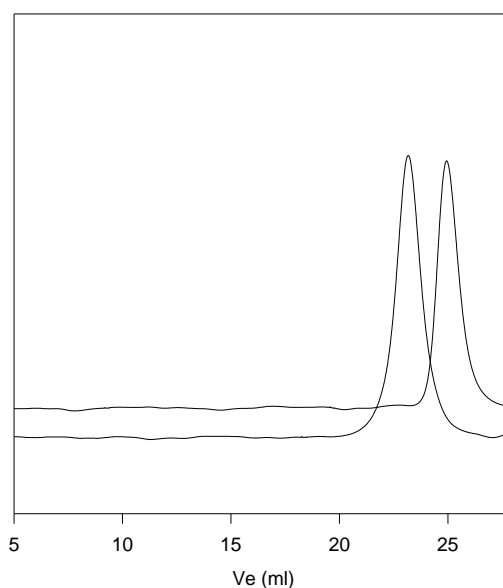
**Synthesis of Monomer:**

**Characterization:** It was observed SEC columns must have high plate counts to avoid any adsorption with the column packing material. We have used new columns (supelco GHXL 4000 and Water mixed bed column). THF (4% V/V) (Et)3N as carrier solvent and the polymer solution was prepared in THF with DMF as solvent. (5:5 solution). The SEC carried out at 35 °C column temperature.

**Purification of the polymer:**

**Removal of catalyst:** By passing the polymer solution in CHCl<sub>3</sub> through Al<sub>2</sub>O<sub>3</sub> (neutral) packed column. The obtained polymer solution was concentrated.

**Removal of un-reacted monomer:** Polymer was precipitated in hot ethanol-hexane mixture. This steps ensure removal of unreacted monomer which was verified by GPC and by <sup>1</sup>H NMR.

**<sup>1</sup>H NMR of monomer:****<sup>1</sup>H NMR of the PEG-Br used for such synthesis****<sup>1</sup>H NMR of the diblock copolymer****SEC of the diblock copolymer:****P11264B-EO4CNBPBMA**

Size exclusion chromatography of the product:

— Poly(ethylene oxide), M<sub>n</sub>=3,000, M<sub>w</sub>=3300, PI=1.09

— Block Copolymer PEO(3,000)-b-4-CNBPBMA (11,000), PI=1.25