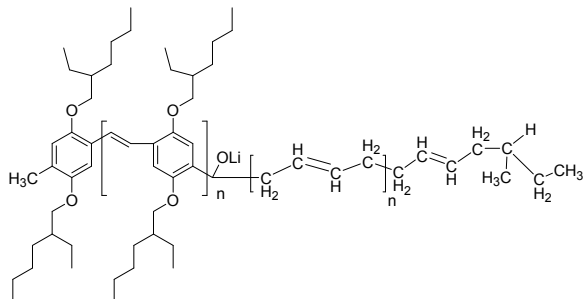


Sample Name:**Poly(2,5-di(2'-ethylhexyloxy)-1,4-phenylenevinylene)-b-Bd (1,4 rich addition)****Sample #: P10924B-DEHPPV-Bd****Structure:****Composition:**

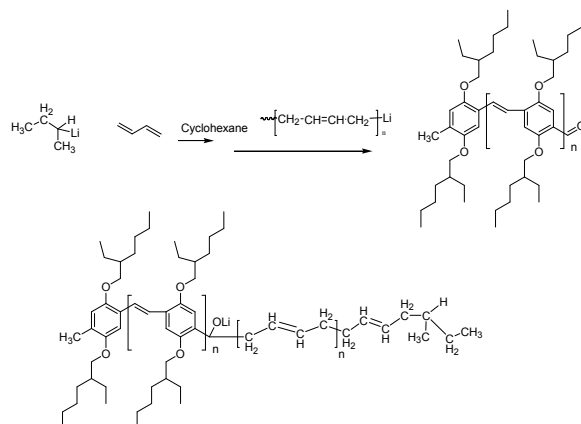
Mn x 10 ³ DEHPPV-b-Bd	PDI
5.0-b-10.0	1.8

Synthesis Procedure:

Synthesis of such diblock copolymers was carried out in two steps:

1. synthesis DEH-PPV bearing end group of aldehyde:
2. Reaction of Poly butadiene living lithium salt with aldehyde terminated DEH_PPV. Followed by rigorous fractionation to remove any untreated poly butadiene fractions.
3. Aldehyde end group DEH-PPV is synthesized by polymerization of Seigrist polycondensation under basic condition in DMF, followed by hydrolysis in acidic water. The polymer was then dissolved in chloroform and washed with distilled water until neutral, dried over MgSO₄ and precipitated into cold methanol.

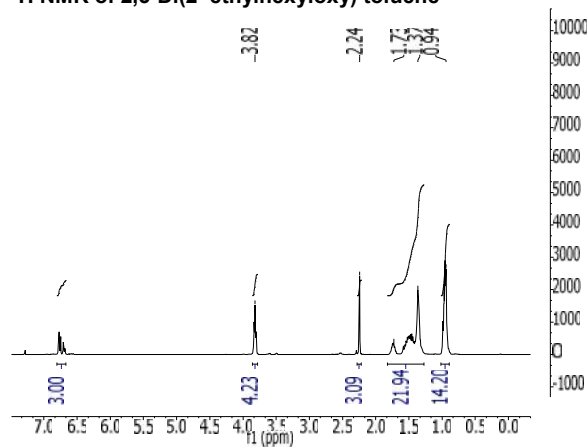
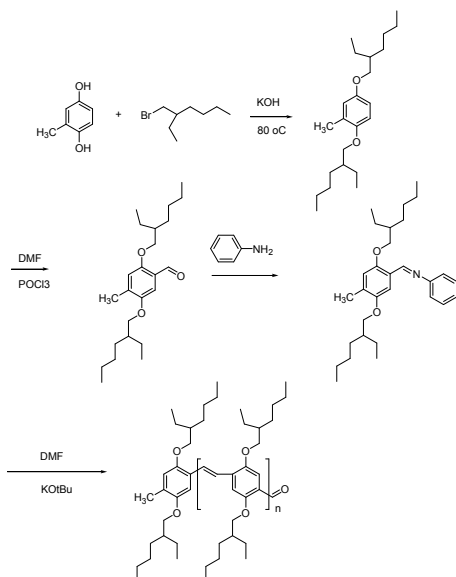
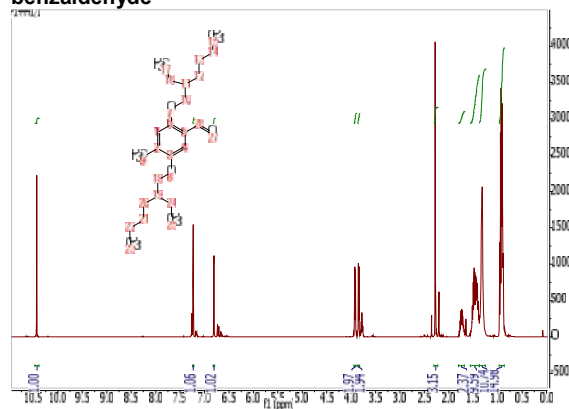
Reaction with Polybutadienyllithium macroanions:

**Characterization:**

The molecular weight was obtained by ¹H NMR by comparing the end aldehyde group at 10.5 ppm to aromatic proton at 7.54 ppm or vinyl proton at 7.26 ppm for the aldehyde end functionalized prepolymer followed by block copolymer.

Solubility:

MEH-PPV-Bd is soluble in THF, CHCl₃ hexane.

¹H NMR of 2,5-Di(2'-ethylhexyloxy) toluene**Reaction with Poly butadiene****¹H NMR of 2,5-Di(2'-ethylhexyloxy)-4-methyl-benzaldehyde**

¹H NMR spectrum of P10324B-DEHPPV-Bz. The x-axis represents chemical shift in ppm (0.5 to 8.0), and the y-axis represents intensity (0 to 1600). The spectrum shows several peaks, with the most prominent ones labeled at 3.96, 28.24, and 12.00 ppm.

Size exclusion chromatography of poly(DEHPPV-Bd)

— Poly(2,5-di(2-ethylhexyloxy)-1,4-phenylenevinylene, $M_n=5,000$, $M_w=7500$, $M_w/M_n=1.5$

— PBd $M_n=10,000$, $M_w/M_n=1.10$

— After linking reaction DEHPPV-Bd $M_n=\text{DEHPPV}(5,000)\text{-}b\text{-(}10,000\text{)}$, $M_w/M_n=1.6$