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Title:	Synthesis of Electron-Deficient Discotic Liquid Crystal
Authors:	Yadav, Rahul Singh .
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Abstract:	<p>Organic semiconductors have gained popularity amongst researchers because of their competitive properties with traditional inorganic semiconductors. The charge carrier mobility is the basic need for an organic compound to be used as an organic semiconductor. Till now, a diketopyrrolopyrrole (DPP) based organic semiconductor has shown the highest charge mobility in a p-type organic semiconductor. The DPP structure can be modified to be used as an n-type semiconductor or as an ambipolar transistor. In 1970, the DPP core structure was synthesized and published for the first time. After this, DPP was commonly used as a dye in inks and paints for coating purposes. In 1993, the first report regarding conjugated DPP derivatives came. This was the first time when DPP was introduced in the field of organic electronics. In 2008, Nguyen, Janssen, and Winnewisser, along with their respective co-workers, first made DPP-based organic semiconductors for OFETs, OPVs. This work opens the door for making highly efficient organic electronic devices based on the DPP core. Due to the wide application of DPP in organic materials, we have synthesized novel DPP based discotic liquid crystal (DLC), which displays liquid crystalline property at room temperature. The purity of the final DLC has been investigated via ¹H NMR and ¹³C NMR. In addition to this, the mesomorphic property has been investigated by Polarizing Optical Microscopy (POM) studies. In this thesis, we have also synthesized TPE derivatives, which have four phenyl ring with long alkoxy chains directly attached to the TPE core without any linking groups. The purity of the final derivative was confirmed by ¹H NMR. But due to the structural property of TPE, it failed to show the liquid crystalline property</p>
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