Title:	Synthesis and characterization of N-Annulated perylene basd functional discotic liquid crystals
Authors:	Jain, Ajay
Keywords:	Synthesis N-Annulated functional discotic liquid crystals
Issue Date:	Apr-2022
Publisher:	IISER Mohali
Abstract:	Organic electronics is a booming field nowadays, juxtaposing materials science, organic synthesis, and solid-state physics to conceive novel organic materials. Due to their low-cost solution processability and easy synthetic alterations, organic molecules are of immense interest to researchers. In this context, Discotic liquid crystals (DLCs) are new embryonic smart organic materials which can be realized for applications in Organic Solar Cells (OSCs), Organic Field-Effect Transistors (OFETs), Organic Light-Emitting Diodes (OLEDs), and display devices. DLCs are predominantly formed by the disc-shaped mesogens typically rendering columnar mesophases due to the presence of substantial π-π interaction among different mesogenic entities. However, the discotic mesogens exhibiting discotic nematic (N D) phase with long-range orientational order in the discs are infrequent though significant in display devices. However, among the narrow range of discotic nematic mesogens, most are frequently chaperoned with a high clearing temperature and limited range of mesophases. Yet, the presence of the N D phase at room temperature in liquid crystalline material over a broad range of temperatures is crucial for its execution in day-to-day devices. Perylenes are a class of luminescent organic fluorophores that have potential optoelectronic applications in OLEDs. Self-assembled structures of both perylene bisimides and perylene tetraesters have been widely explored as functional materials and are known to exhibit columnar (at room temperature) mesophases and nematic (at high temperature) mesophases rarely when alkyl chains are incorporated. In this regard, we have synthesized novel DLCs, based on perylene, exhibiting a broad range N D VI phase at room temperature.
URI:	http://hdl.handle.net/123456789/4149
Appears in Collections:	MS-17

Files in This Item:

File	Description	Size	Format	
Yet to obtain consent.pdf		144.56 kB	Adobe PDF	View/Open

Show full item record