PÔSTER - RESUMO - DISPOSITIVOS OPTOELETRÔNICOS

ALIGNMENT STUDY OF A THERMOTROPIC DISCOTIC LIQUID CRYSTAL

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The development of organic electronics provides electronic components to the industry that are alternatives to the inorganic semiconductors, but with higher structural flexibility, less thickness, weight and cost [1]. Liquid crystal (LC) materials in their mesophases show a molecular organization similar to that of a solid crystal, and can also be almost as fluid as a liquid. It is possible to control the molecular ordering of these materials in relation to the substrate, with molecules aligned face-to-face or edge-to-edge, through thermal treatments [2]. These properties give the semiconductor material a high potential for use in devices, such as Organic Field Effect Transistor (OFETs), Organic Light Emitting Diodes (OLEDs), Organic Solar Cells (OSCs) [1]. The present work aims to investigate the homeotropic alignment (face-on configuration) in the columnar hexagonal mesophase of a discotic LC consisting of the aromatic center benzo[ghi]perilene-diimide surrounded by peripheral aliphatic chains with 11 carbons, referred to here as BPD-11. To investigate homeotropic alignment in films, different strategies were implemented, such as the formation of blends and bilayer samples with another columnar liquid crystal whose alignment parameters are already known [3]; thermal treatments applied to individual BPD-11 films, either in open films or in confined films using a sacrificial polymeric layer or glass cells. The effectiveness analysis of those

methods was through Polarized Optical Microscopy (POM) and photophysical measurements. The results showed a material with forming potential of homeotropic alignment that can be used in organic electronic applications.

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Palavras-chave: homeotropic alignment; liquid crystals; semiconductors.