

PÔSTER - DISPOSITIVOS ELETRÔNICOS E ÓPTICOS  
(OLED/OFET/OPVS/ETC.)

**COLUMNAR LIQUID CRYSTAL AS ALIGNING HOST FOR EMISSIVE  
MOLECULES IN OLEDs**

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The latest advances with organic semiconductors have provided competitive optoelectronic devices with new functionalities, as observed for organic light emitting diodes (OLEDs), organic field effect transistors (OFETs), organic photovoltaics (OPVs) and sensors. The efficiency of these devices depends directly on the molecular ordering achieved by the active layer, since higher order improves charge transport, energy conversion and light outcoupling. In this sense, self-organizing molecules, such as liquid-crystalline materials, effectively play a role in this field. In a previous work, we demonstrated that the molecular alignment of a columnar liquid crystal (ColLC) in a diode structure improved the charge carrier mobility in five orders of magnitude and allowed

electroluminescence emission [1]. Here, we investigate a triazine-based ColLC as aligning host for emissive molecules to be applied in the active layer of OLEDs, based on a work where we demonstrated the potential of the photophysical properties of liquid-crystalline triazine-based molecules for alignment-induced enhancement of light outcoupling [2]. As guest emissive molecule we investigated a thermally activated delayed fluorescent compound, which absorption band overlaps with the emission peak of the triazine-based host in order to optimize energy transfer [3]. The photophysical studies demonstrated that for 10.0 wt% concentration of the guest, the host emission is totally converted to the guest with increasing of the photoluminescence quantum yield, which is also influenced by the molecular organization of the medium.

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