

THIN FILMS ILS AS COMPONENTS OF ORGANIC LIGHT EMITTING DIODES

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Introduction: Organic light-emitting diodes (OLEDs) have been the subject of intense studies due to their application in imaging and light technology. Some challenges on the path to develop high-performance OLEDs are the design and synthesis of readily processable and thermally emissive charge transport materials with improved multifunctional properties. A general problem of these devices is the low efficiency in the charge transport from the external electrodes through the organic layer in which electron and hole recombination must generate the electronically excited state that will originate light emission. It has been reported that the presence of ionic liquids (ILs) as a component of the multilayer device can enhance the efficiency of OLED emission, and this can be justified by the accumulation of ions near the electrodes which leads to high interfacial fields thus improving the tunnelling of electrons [1,2].

Experimental: The high electrical conductivity, thermal and electrochemical stability, and compatibility with organic semiconductor materials (OSCs) are important factors contributing for the potentially successful application of ILs in organic devices. In this context, ILs, particularly those with imidazolium type, will be deposited as thin films in conjunction with other OSCs with charge transport and emission properties, using a new vacuum deposition system developed in our group.

References:

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